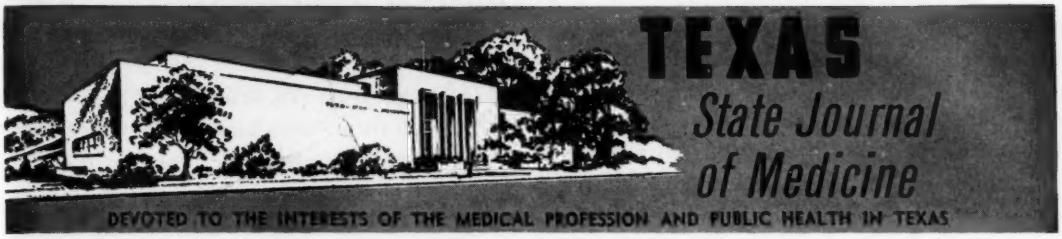

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Problem of Narcotics

For nearly half a century the curtailment of the illicit traffic in narcotic drugs, cure and rehabilitation of drug addicts, and prevention of drug addiction has been the responsibility of the United States Government, as represented by the Federal Bureau of Narcotics in the Treasury Department.

During these many years well meaning citizens, including some physicians, have from time to time, advocated a program contrary to that of the government of the United States. This is especially true in the past 3 or 4 years. Some persons allege that the imposition of severe penalties for peddlers of narcotic drugs has had no beneficial effect. They assert that since the cure of drug addiction is so difficult and the profit in the illicit peddling of narcotics so great, the best way—or at least a way worth trying—is to furnish narcotic drugs free of charge or at cost to drug addicts who cannot be cured.

The fallacy in this proposal is several fold. Primarily, however, it ignores two indispensable factors in development of the drug habit: (1) the existence of addiction-prone personalities in a tolerant social environment, and (2) the availability of narcotics. If these two conditions exist, there will always be drug addicts irrespective of whether heroin is sold illicitly at $2 or legally at 2 cents per capsule.

Effective law enforcement on a national and local scale, as well as on an international scale, could practically eradicate the drug traffic. If a choice had to be made, I sincerely believe that every thinking person would rather settle for an illegal market catering to 40,000 addicts than a legal market supplying 400,000 addicts.

The distribution of legal narcotics to addicts would increase the illicit traffic in narcotics by adding to the total amount of drugs in illicit channels and by removing whatever deterrent value lies in the fear of the abstinence syndrome. Always sure of the minimal dose necessary to prevent withdrawal symptoms, addicts would have little immediate incentive to seek a cure. In addition, nonaddict users and potential addicts would perceive fewer hazards in addiction.

The belief that addicts whose drug demands are satisfied lead "otherwise normal and productive lives" is based on a myth. Every medical licensing board in the United States must agree. Otherwise, why is a physician's license suspended or revoked when he becomes addicted to narcotic drugs?

The Federal Bureau of Narcotics enlists the support of the medical profession in shouting down this clamor by a minority for so-called ambulatory treatment and free legal drugs to addicts. It would be significant if every state medical association would go on record (as several have) condemning the ambulatory treatment of drug addiction and advocating compulsory civil commitment of addicts similar to commitment for patients with mental illness.

—ERNEST M. GENTRY,
Bureau of Narcotics, Dallas.

[Ed. Note: At the most recent meeting of the Executive Board of the Texas Medical Association, a resolution endorsing Mr. Gentry's recommendation was adopted.]

Help Fight TB

Use Christmas Seals

Medical Significance Of Malocclusion

In recent years physicians have been urged to consider the "whole patient." However, they seldom consider orthodontic problems unless a definite cosmetic defect is present.

Dr. Abraham Hoffman defines orthodontics as "A biomechanical science which has for its object the prevention or correction of malocclusion of the teeth and the harmonizing of the structures involved so that the dental mechanism produced will be best suited to the functional activities of the human organism as a whole. In theory or in practice it is a study of growth and development linked with physical and mechanical principles." Deviations or disharmonizing of the structures can be obvious, such as protrusion of the maxillary incisors (overbite), crowding of the teeth, and absence of teeth, or conditions may be more subtle to the untrained eye, such as cross bite and inlocking of the upper and lower teeth.

When obvious defects are present, inferior feelings can develop that may cause serious personality disorders. Treatment is better instituted early in adolescence before the emotions are warped and irreparable disturbances ensue. Malocclusions can be responsible for faulty mastication of food which, in turn, may enhance constipation and other chronic digestive disturbances. Faulty relationships of teeth also can cause pain of the temporomandibular joint which usually becomes apparent in the later years of life.

A complete physical examination should include study of the teeth and periodontal tissues, as well as of the teeth in normal chewing apposition. If caries or gingival disease is present, proper treatment should be instituted by a competent dentist. For abnormalities of occlusion, referral to a competent orthodontist is in order. Treatment is usually delayed until permanent dentition is complete unless alignment is necessary with mixed dentition (primary and permanent teeth present at the same time).

In a certain percentage of patients, removal of permanent teeth is necessary to relieve overcrowded areas and to make proper alignment possible. The physician could aid greatly by mentioning this as a possibility before referral, as it is always a shock to parents to be told that permanent teeth must be sacrificed.

It would be a great service to all patients if members of the medical and dental professions had closer liaison and if they realized the realms of their respective missions in caring for the "whole person."

—GEORGE WILLEFORD, M.D., Harlingen.

Newcomer Service

Many newcomers move into a strange place that eventually will become "home." They order their lights, water, and gas turned on. They get the furniture temporarily arranged. They check on dozens of other odds and ends.

But usually they don't count on illnesses. They put off the day they might have to pick a doctor—perhaps they have asked their previous doctor to recommend one in their new location, or maybe in the bustle of moving, they forgot to check with him.

If the baby gets sick, they'll speak to a neighbor about local facilities.

In Alice, the Brooks-Duval-Jim Wells Counties Medical Society does not wait for the newcomer to search out local facilities or out-of-town facilities in a haphazard manner.

Instead, an informative welcoming letter is sent to each newcomer by Mrs. John A. Sharp's newcomer service. It is signed by the county society secretary, Dr. Richard O. Albert. Other county societies also have undertaken similar projects.

The letter is to the point: "This letter is to acquaint you with the medical care and hospital facilities that are available in Alice. We feel that there is no better care to be found in any other town of its size in the country, and that at least 95 per cent of all illnesses and surgery can be taken care of here."

Local hospital facilities are outlined; the 12 physicians in Alice are portrayed as men who meet regularly and keep up with modern medical advances; telephone listings of physicians are noted; and newcomers are told how to reach their doctors in emergencies.

To the letter is added a friendly closing: "We feel that you will like Alice, and we know that from the standpoint of medical care and hospital facilities available it is an excellent town in which to live."

Illness doesn't wait for a newcomer to become acquainted with a town—but cheerful information from the men of medicine may ease the pain a little in case it strikes. At least, it will tell the newcomer that he can trust the doctors in his new hometown, too.

Influenza Immunization Program

Within the last three years, influenza has once again proved a major health menace. Beginning in the fall of 1957, a new antigenic variant of Type A virus, later termed A_2 or "Asian" influenza, caused a widespread epidemic in the United States and abroad. Mortality rates were excessive, particularly among older persons and patients with chronic illnesses.

During the first three months of 1960, another epidemic swept through the United States, causing a large number of deaths among the same categories of persons—an excess of 26,700. Analysis of mortality rates associated with these various epidemics has indicated that persons 65 years or older and those with certain chronic diseases have an increased risk of death from the disease. Almost 90 per cent of the increase in mortality rate was attributable to two associated diseases: pneumonia (40 per cent) and cardiovascular-renal disease (46 per cent).

Recently, polyvalent influenza virus vaccine has been reevaluated and found to be of

definite value in prevention of influenza. Therefore, the Public Health Service Advisory Committee on Influenza Research strongly recommends continuing annual immunization of persons in this segment of the population as a protective measure.

Specifically, the Committee recommends routine yearly immunization for patients in the following categories:

1. Persons of all ages with chronic debilitating disease (for example, cardiovascular, pulmonary, renal, or metabolic disorders)
    a. Patients with rheumatic heart disease, especially those with mitral stenosis.
    b. Patients with other cardiovascular disorders, such as arteriosclerotic or hypertensive heart diseases, especially when there is evidence of frank or incipient cardiac disability.
    c. Patients with chronic bronchopulmonary disease, for example, chronic asthma, chronic bronchitis, bronchiectasis, pulmonary fibrosis, pulmonary emphysema, and pulmonary tuberculosis.
    d. Patients with diabetes mellitus.
    e. Patients with Addison's disease.
2. Pregnant women.
3. All persons 65 years and older.

Influenza is not necessarily more likely to attack persons in these specific classes, but occurrence of the disease in them is more likely to threaten life. In patients with chronic cardiovascular-renal and pulmonary disease, for example, the condition places a severe stress on cardiovascular and pulmonary function, and the frequency of bacterial complications is greatly increased.

Other groups which should be considered for routine annual immunization include hospital staffs, persons in institutions, and industrial or service groups in occupations in which the absence of a sizeable part of the force would seriously disrupt an essential service.

Each of the seven pharmaceutical concerns licensed to manufacture influenza vaccine produces an aqueous, polyvalent, killed-virus preparation with a prescribed antigenic composition of 500 CCA units per cubic centimeter for the current season.

Recommend dosage for initial immunization of adults is 1.0 cc. subcutaneously, followed by a second like injection two months later. Each year thereafter, prior to November 1, a booster subcutaneous injection of 1.0 cc. is recommended.

The current vaccine contains no penicillin. Since it is produced in eggs, however, the Committee has advised against immunization for persons who are unable to eat eggs or chicken because of food allergy, or those who have had allergic reactions after previous inoculation with the egg vaccine—regardless of whether the reaction was urticarial, asthmatic, or anaphylactic.

In past years, immunization programs have been intermittent, depending on public concern before and during epidemic periods. Epidemics tend to recur in cycles of unpredictable periodicity, but influenza is continually endemic. For this reason immunization of the groups specified in which mortality risk is high should begin immediately and should be continued annually, regardless of the predicted incidence of influenza for a specific year.

—VAN C. TIPTON, M.D., Director,
Communicable Disease Division,
State Department of Health,
Austin, Texas.

A column for readers' assents, dissents, and comments, selected monthly by the official advisory committee of the Texas State Journal of Medicine

Coroner's Thrombosis

"Texas laws pertaining to inquests on the cause of death are outmoded and should be brought up to date and made effective," began an editorial in the *Texas State Journal of Medicine.*

There is nothing new about this editorial since it has been obvious for more than a quarter of a century that the justice of the peace-coroner method of investigating death without medical attendance is hopelessly inadequate. The editorial in question, however, did not appear this year. It was printed in the December, 1946, issue (vol. 42, p. 457). With the jet age progress of modern forensic pathology, our oxcart technique for investigating the cause of death in Texas stands indicted, tried, and convicted before the court of public opinion.

The editorial of 1946 and a news story on p. 501 of the same issue referred to another legislative effort to patch up the already inadequate justice of the peace-coroner system. The fee for inquest was doubled in that bill, so that the justice of the peace received $10 instead of a $5 fee for investigation of the circumstances of death. As an innovation, the justice of the peace was required (Article 970) to call in the County Health Officer, or if there was no such or his service was not obtainable, to consult "a duly licensed and practicing physician as to necessity of an autopsy before reaching a determination as to whether or not to order an autopsy." This, of course, was a tremendous forward step, but it was negated by the fact that the final determination as to need for medical investigation of death remained with the justice of the peace. The bill passed handily, but the innovation was generally ignored.

Under Texas law, the justice of the peace is not required to have any training in anatomy, pathology, or any of the fields of medicine. In fact, he is not required to be a licensed attorney, and more often than not, he is only slightly versed in medicolegal matters. It simply is not fair to such an official to expect him to investigate matters with which he is entirely unfamiliar and to reach any laudable verdict. Since no one can argue but that the heart always stops in death, it is reasonably safe to indict every corpse as being the victim of a heart attack. More than one victim of murder has been officially certified as dying from "coroner's thrombosis."

Through the efforts of Robert Baker of Houston, former representative in the House, a permissive bill was passed setting up a model medical examiner system in 1955. It applied, however, to only four counties in Texas, namely Harris, Bexar, Dallas, and Tarrant. Two of these counties availed themselves

of the benefits of such modernization; San Antonio and Houston now have modern medical examiner systems. The medical examiner of Houston is Dr. Joseph A. Jachimczyk, a graduate in both law and medicine and a diplomate in forensic pathology of the American Board of Pathology. The certificate in forensic pathology is granted only after rigid examination and specialized training, not only in general pathology and general medicine, but, of course, after extensive training in investigative work, particularly in the application of science to medico-legal investigation.

It is not necessary to expand on the tremendous advances of forensic medicine and forensic pathology. Even the layman who reads novels and children who read comic strips are familiar with the fact that there are tremendous contributions from the fields of immunohematology, ballistics, toxicology, spectroscopy, microscopic pathology, and numerous related disciplines. Without these aids the earnest and conscientious justice of the peace often is stymied in his efforts to arrive at accurate death verdicts.

The fact that there is every evidence of violence is all the more reason for careful investigation. I remember one of my first experiences in this field, at which time I went out with a modern medical examiner to investigate a badly mangled corpse found on a railroad track after a freight train had passed across it. Portions of the corpse were strewn over several hundred feet of trackage and it seemed futile to examine this material. It was certainly worthwhile, however, since a small bullet hole in the occipital bone of the partially mangled skull was found on careful autopsy of the fragments. To assume that every death is natural simply because there is no external wound is to put the seal of approval on murder performed with finesse.

The Texas Society of Pathologists, for nearly two decades, has been increasingly active in trying to bring to Texas a statewide modern medical examiner system which would insure some uniformity. The adoption of medical examiner systems city by city and county by county simply invites murderers to operate across county lines, where the probability of discovery is little or none. The total membership of the Texas Society of Pathologists is fewer than 150, so that obviously no great legislative enactment can be expected from such a small group. It will take the enthusiastic support of the Texas Medical Association and of all those interested in law enforcement to give Texas the benefits of a statewide system.

The cost of a system of this type is undoubtedly higher than that resulting from the expenditure of $10 for investigation by a justice of the peace in each inquest, but it is only a minute proportion of the countless millions of dollars spent for police and judicial functions aimed at repression of crime. All sober and thoughtful citizens of the state should lend their active support to speed the day when the sovereign state of Texas will have the same high level of scientific investigation of death, with medical attendance, which prevails in many of our sister states.

—JOHN J. ANDUJAR, M.D., Fort Worth.

Texas Nursing Homes

Of special concern to Texas doctors is the quality of nursing home facilities in the state—an essential part of all-inclusive geriatric patient care.

Accomplishments and aims of members of the Texas Nursing Home Association to improve nursing homes and close substandard institutions is commendable. At present, there is underway a national accreditation program for nursing homes comparable to that for hospitals. The Texas Medical Association has followed the lead of the national medical association in cooperating with state hospital, dental, and nursing home organizations. A national joint council to improve the health care of the aged has been duplicated on the state level.

Nursing homes have a great potential in rehabilitation of patients, and it is equally important that they care for patients stricken with terminal illnesses. Separate housing facilities for patients according to degree of disability is highly desirable. For example, ambulatory patients should be separated from bedridden patients and those with terminal illnesses, and mentally well balanced from disturbed ones.

For the best patient care, nursing home assistants should be assigned to the care of patients on the basis of their understanding of the individual's needs. Each assistant should have the ability to adapt to the needs of those in her care.

Recruitment of women who are willing and eager to care for patients is vital. Because of the shortage of qualified help, the necessary personal care of older patients sometimes is missing, and mechanical care takes its place. We know that patients—old or young—need help from people who care about them as individuals, and should do our best to assure that this quality is never lacking.

May Owen

ORIGINAL ARTICLES

Carcinoma of the LUNG

Although much improvement can be made in therapeutic results in carcinoma of the lung, the author believes that a 30 per cent 3 year survival rate after resection is not bad when compared with the survival rates in carcinoma at other sites. Treatment results in four cellular types of bronchiogenic carcinoma are discussed, in addition to an explanation of diagnostic methods used.

O. THERON CLAGETT, M.D.

ROCHESTER, MINNESOTA

CARCINOMA of the lung has been written about extensively in the medical literature in the past 25 years. It also has been a subject appearing with great regularity in newspapers and lay journals. According to newspapers, the cause of carcinoma of the lung is thoroughly established, and the public certainly has been well informed about it.

Despite all this publicity, carcinoma of the lung still occurs and, unfortunately, not enough is being accomplished in the way of earlier diagnosis and treatment. This is regrettable because a great deal is known about carcinoma of the lung. Methods of diagnosis and treatment are readily available. If these were used more effectively, considerable improvement in prognosis would result.

Little question exists that the status of pulmonary carcinoma has changed considerably since 1912, when Adler[1] stated that neoplasms of the lung were among the rarest forms of disease. I do not believe that the pathologists of that day overlooked or misdiagnosed carcinoma of the lung. Instead, I am satisfied that the incidence of carcinoma of the lung has increased tremendously. However, I am not sure that this rate has reached the epidemic proportions that some investigators would have us believe. My associates and I see patients with carcinoma of the breast, colon, stomach, cervix, and ovary more commonly than those with carcinoma of the lung. However, pulmonary cancer does occur frequently and presents an extremely serious problem.

Etiologic Aspects

Although I do not know what causes carcinoma of the lung or of any other organ, I would agree that most patients who have certain cellular types of carcinoma of the lung either smoke or have smoked

a large number of cigarettes. I am willing to accept the evidence that cigarette smoking may be an important factor as a cause of some carcinomas of the lung. However, other factors also must be involved.

Recent evidence from Australia and New Zealand is of interest in this regard. Considerable migration from the British Isles to the Australasian region has occurred since 1945. The smoking habits of persons in Australia and the British Isles are similar; even the same brands of cigarettes are used. Recent studies have shown that the incidence of carcinoma of the lung in persons who have emigrated from the British Isles is several times that in native Australasians, that the incidence in persons living in large metropolitan areas in Australia is twice as high as in persons in smaller cities, and that the incidence in the rural population is one third that in persons living in cities, even though smoking habits are the same.

Thus, a person's environment and substances in the air that he breathes may be influential in the genesis of carcinoma of the lung. It appears likely that people will continue to smoke and to live in large cities, and carcinoma of the lung probably will continue to occur frequently. Efforts to learn more about the cause of this disease and to develop means of preventing it must be supported and encouraged. Until these efforts become effective, physicians must deal with this disease as best they can.

Clinical and Diagnostic Aspects

It is possible to diagnose carcinoma of the lung earlier and to treat patients more effectively than at present. If patients and physicians would use the facts that are known about this disease and available methods of diagnosis, the diagnosis could be established earlier, allowing effective treatment in a much greater percentage of cases.

Carcinoma of the lung is predominantly a disease of males, with approximately 90 per cent of cases occurring in men. It is predominantly a disease of persons more than 40 years of age; 94 per cent of patients seen by my associates and me were in this age group. Most patients with carcinoma of the lung are or have been heavy smokers. The possibility of carcinoma of the lung should not be ignored in women or in persons less than 40 years of age, but obviously the index of suspicion for this disease should be high in men more than 40 years old who are heavy smokers. Such persons should have a thoracic roentgenogram at least once a year. Any patient who has symptoms referable to the respiratory tract or whose roentgenogram shows an abnormality should be considered as possibly having carcinoma of the lung.

Physicians have too great an inclination to think of pulmonary disease in terms of pneumonia, virus pneumonia, unresolved pneumonia, or tuberculosis rather than possible neoplasm. There is still too much of a tendency to observe patients with pulmonary lesions or to treat them with a great array of antibiotics, instead of using appropriate diagnostic procedures to determine what is really wrong. The diagnosis of pulmonary carcinoma is relatively easy in most cases, and can be accomplished by means avail-

Dr. O. Theron Clagett of Rochester, Minn., presented this paper before the Section on Surgery at the Texas Medical Association's 1960 Annual Session, April 12, in Fort Worth.

able almost everywhere in this country. Few organs in the body are as accessible to accurate diagnostic investigation as is the lung. In most instances appropriate roentgenographic studies, bronchoscopy, cytologic examination of sputum and bronchial secretion, and, if necessary, exploratory thoracotomy provide means of establishing the diagnosis of even early carcinoma of the lung.

Carcinoma of the lung rarely is completely asymptomatic. In a review of the records of 1,600 patients with this disease, only 29 were completely free of symptoms. It should be possible to diagnose this condition in many more cases before symptoms are present if the readily available diagnostic methods are used appropriately.

Roentgenography.—The single most valuable method of detecting carcinoma of the lung is provided by the roentgenologist. The usual thoracic roentgenogram is all that is necessary in most instances. In selected cases, tomograms are extremely valuable since they may reveal evidence of lamination, cavitation, calcification, or umbilication of the lesion that may not be apparent in the usual films. Fluoroscopy, bronchography, and angiocardiography occasionally give valuable information, but are not often necessary. Roentgenographic methods do not provide the pathologic diagnosis of a pulmonary lesion. However, they represent the best method for detecting pulmonary disease and provide invaluable information regarding its location, extent, and character.

Bronchoscopy.—In approximately 40 per cent of carcinomas of the lung, it is possible by means of bronchoscopy to see the lesion and to secure tissue for biopsy. This examination also provides valuable

data concerning the extent and location of some bronchial carcinomas, and it is a means of obtaining bronchial secretions for cytologic studies. Bronchoscopy should be done in patients who have lesions near the hilus of the lung and in those with evidence of bronchial obstruction. It is not of much use when the lesion is located in the periphery of the lung.

Cytology.—Cytologic examination of the sputum and bronchial secretions for malignant cells is not used as extensively as the method deserves. With this procedure, a definite preoperative diagnosis of carcinoma of the lung has been established in about 75 per cent of cases. Even the cellular type of carcinoma usually can be predicted by such studies. If it were practical to use this method as a routine screening procedure, as for carcinoma of the cervix, many carcinomas of the lung could be diagnosed even before they are detected by the roentgenologist.

The sputum of one of my patients with a chronic cough showed malignant cells repeatedly for 5 years before the causative lesion was found, even though every other available diagnostic procedure was used. In another patient, sputum contained malignant cells for 3 years before the source was located. Several other patients with chronic productive cough and sputum containing malignant cells are being kept under observation. Repeated roentgenograms and bronchoscopic examination have not yet located the tumor. The malignant cells in most of these patients are of squamous cell type. This indicates that squamous cell carcinomas of the bronchus are often slow-growing lesions. They are often present for long periods, even years, before they can be detected by roentgenographic methods, or even by bronchoscopy and bronchography. Cytologic examination of the sputum and bronchial secretions for malignant cells demands a great deal from the pathologist, but it is a rewarding diagnostic procedure.

Thoracotomy.—Diagnosis of carcinoma of the lung cannot be established without exploratory thoracotomy in about 25 per cent of cases. Lesions in these instances usually are peripheral pulmonary nodules. Exploratory thoracotomy is a thoroughly reasonable diagnostic procedure for indeterminate pulmonary lesions when the patient's condition will permit operation; the risk is small. A pulmonary lesion cannot be treated intelligently unless its nature is known. There is no excuse for a "wait and see" policy in indeterminate pulmonary lesions, because carcinoma of the lung can simulate almost every known pulmonary disease in its clinical and radiologic manifestations. In my experience, carcinoma of the lung was found in approximately one third of the patients on whom exploratory thoracotomy was performed for indeterminate pulmonary lesions.

Classification and Its Practical Application

It has been the custom to classify all "neoplasms" of the lung under the broad category of carcinoma of the lung or bronchiogenic carcinoma. However, these lesions should be thought of as a variety of different neoplasms, each with different gross and microscopic pathologic characteristics, a different clinical course, a different prognosis, and probably a different cause. Each perhaps requires different treatment.

This is not a new concept, of course. It has been recognized for years that bronchial adenomas and alveolar cell carcinomas are pulmonary neoplasms whose character and behavior place them in categories separate from bronchiogenic carcinomas. I believe that variations in the different cellular types of neoplasms classified as bronchiogenic carcinomas are almost as great as those between bronchial adenoma and alveolar cell carcinoma. It would help to clarify our thinking, writing, and talking about neoplasms of the lung if each cellular type of growth were considered as a separate entity rather than as a variant of a common disease.

However, I do not wish to overemphasize the importance of the different histopathologic cellular types of pulmonary neoplasms. Individual tumors of the lung of a particular type do not always behave as predicted. Various mixtures of types of cells can occur, and probably not more than 65 per cent of bronchiogenic carcinomas are of a pure cellular type. Nevertheless, sufficient correlation is present between the clinical course and manifestations of a pulmonary tumor and its predominant type of cell to justify considering each cellular type as an entity. It is possible to predict fairly accurately from the clinical course and roentgenographic appearance of a pulmonary tumor what type of cells it is composed of, and the cellular type of a tumor of the lung certainly influences the operability, resectability, prognosis, and appropriate treatment.

The classification that my colleagues and I use was derived from a study of 1,600 primary tumors of the lung. It differs from most classifications in that it divides the group of undifferentiated carcinomas into a large cell and a small cell variety. This is important, as will be pointed out later. Furthermore, diagnosis of squamous cell carcinoma is restricted to those lesions showing a definite epidermoidal appearance. It does not include tumors that some pathologists call undifferentiated squamous cell carcinoma.

Each of the four cellular types of bronchiogenic carcinoma is considered separately, with brief description of the characteristics that justify their classification as separate entities.

Squamous Cell Type.—Squamous cell carcinomas made up approximately one third of cases of carci-

noma of the lung in the present series. It is a disease of men, with only 2 per cent of cases occurring in women. Lesions of this type are usually seen in persons who have been heavy smokers. Ordinarily such a tumor is located in the major bronchi. When the site is peripheral to the major bronchi, the tumor is likely to cavitate. Squamous cell carcinoma of the lung can be seen on bronchoscopic examination in a large percentage of cases, and tissue can be obtained for biopsy.

Cytologic examination of the sputum and bronchial secretions reveals malignant cells in most instances. The bronchial mucosa shows microscopic evidence of malignant changes extending beyond the gross limits of the tumor. These carcinomas tend to spread and metastasize along the lymphatic channels; therefore, extensive and thorough dissection of the lymph nodes is important. Recurrence in the bronchial stump is common unless these tumors are removed with a wide margin; therefore, conservative resection, such as lobectomy, is not advisable. An aggressive surgical attack in squamous cell carcinoma of the lung is justified, because the rate of resectability is relatively high and the prognosis is relatively good.

Small Cell Type.—Undifferentiated small cell, or oat cell, carcinomas of the lung occur in men in 99 per cent of cases. They are centrally located near the hilus in the majority of patients. Most persons with this type of carcinoma have been heavy smokers. At operation, the tumors usually prove much more extensive than had appeared from bronchoscopic and roentgenographic examination. The rate of operability and resectability is extremely low, and even if the tumor is resectable, prognosis is poor.

Many patients with small cell carcinoma of the lung do not survive for a year, regardless of treatment. The diagnosis usually can be suspected preoperatively from the roentgenograms. It usually can be confirmed by bronchoscopic biopsy or cytologic examination of sputum and bronchial secretions. Surgical treatment is relatively ineffective; in fact, some surgeons are of the opinion that most patients with such tumors should not be operated on. Treatment with nitrogen mustard and radiation therapy are preferable in most instances. Fortunately, small cell carcinomas constitute only about 10 per cent of carcinomas of the lung.

Adenocarcinoma. — Adenocarcinomas comprise about 12 per cent of pulmonary carcinomas. It does not appear likely that smoking is an etiologic factor. Approximately 20 per cent of such tumors occur in women. Adenocarcinomas usually are located in the more peripheral parts of the lung. They rarely can be seen during bronchoscopic examination. Since they do not tend to exfoliate malignant cells into the bronchial tree, cytologic studies of the sputum and bronchial secretions usually are not diagnostic.

Most of the indeterminate nodules or "coin lesions" in the lung that are malignant are of the adenocarcinoma type. Pulmonary adenocarcinomas may grow slowly and may be present for months or years without producing symptoms or showing much increase in size. They do not tend to metastasize or spread by the lymphatic channels, but vascular involvement and hematogenous metastasis are relatively common. These lesions can be treated as effectively by conservative resection as by radical surgical procedures, and prognosis is relatively good.

Large Cell Type.—Undifferentiated large cell carcinomas occur in women in about 25 per cent of cases. It is doubtful that smoking is an important etiologic factor. Such lesions tend to be located in the more peripheral portions of the lung, and may be large before they are recognized. Cytologic examination of sputum and bronchial secretions shows malignant cells in a large percentage of cases. Vascular involvement and blood-borne metastasis are common, but these lesions also can involve the regional lymph nodes extensively. Surgical resection provides the best treatment. Lobectomy is adequate treatment if extent of the lesion permits it. The prognosis for these lesions is better than it is for the small cell undifferentiated carcinomas, but not as good as for the squamous cell and adenocarcinomatous types.

Comment

In my experience, the predominant type of cells in a bronchiogenic carcinoma has significance with regard to the sex incidence; the location and character of the lesion; the bronchoscopic and cytologic diagnosis; the clinical course of the disease; and the operability, resectability, prognosis, and treatment. There are many variables and unpredictable facets in bronchiogenic carcinoma, and not all cases conform to the patterns described. However, from a practical standpoint, some merit is present in the classification of bronchiogenic carcinoma according to cellular types, and it is certainly obvious that what has been called bronchiogenic carcinoma is, in fact, a variety of different neoplasms.

Metastasis.—Most pathologic studies of carcinoma of the lung have emphasized the incidence, location, and extent of lymph-node metastasis, and surgical techniques have been directed toward wide resection of the routes for lymphatic drainage in the thorax. The importance of vascular routes of spread has been appreciated only recently. Studies at the University of Pennsylvania and at the Mayo Clinic, as well as elsewhere, have shown that most types of bronchiogenic carcinomas involve the pulmonary vessels in a large percentage of cases and that free exfoliation

of malignant cells into the blood stream occurs frequently. Actually, spread along vascular routes is much more dangerous than is lymphatic spread.

Blood-borne metastasis to the central nervous system, adrenals, liver, and the other lung is a commoner cause of death than is the primary lesion or its lymphatic spread. Vascular involvement occurs even with small tumors, and it explains why the prognosis for resection of small, apparently favorable carcinomas of the lung is not better. If the location and extent of a pulmonary carcinoma permit conservative resection, blood-borne metastasis can be controlled as effectively in this manner as by a more radical operation. It appears reasonable, therefore, to perform conservative pulmonary resection when possible, except in cases of squamous cell carcinoma, in which wide resection of the lesion and its lymphatic drainage is desirable.

Surgical Treatment: Results.— In the 25 years since the first pneumonectomy for carcinoma of the lung was performed, a tremendous experience in the surgical treatment of such lesions has accumulated. The experience of the author and his colleagues is similar to that reported by others. In the 10 year period from 1943 through 1952, a total of 2,676 patients with carcinoma of the lung were seen at the Mayo Clinic. Thoracotomy was performed in 879 cases, or 33 per cent. The tumors were too advanced to permit operation in the remaining two thirds of cases. Resection of the lesion was performed in 584 (66 per cent) of the 879 cases in which thoracotomy was done.

The surgical mortality rate was 6 per cent. The 3 and 5 year survival rates in the four types of lesions are shown in Table 1. Carcinoma of the lung in persons less than 40 years of age carries an extremely poor prognosis. The condition was inoperable in 63 per cent of 51 such patients. Only 9 of these patients had resectable lesions, and only 1 lived more than 3 years.

Other Treatment.—Radiation therapy has been employed extensively in the management of carcinoma of the lung, being used chiefly for patients with advanced inoperable lesions. It apparently provides palliation in some cases, and a surprising remission occasionally is accomplished. However, the results in general are not impressive. As far as I can determine, nothing approaching a cure has been accomplished. The average survival period for patients with pulmonary carcinoma after radiation therapy is less than a year, which is not much return to the patient for the time and money spent.

TABLE 1.—*Survival Rates in 584 Patients with Carcinoma of the Lung Operated Upon at Mayo Clinic from 1943 to 1952.*

Type of Lesion	Survival Rate (%) 3-Year	5-Year
Squamous cell carcinoma	42	33
Adenocarcinoma	42	28
Large cell carcinoma	35	27
Small cell carcinoma	21	15

Considerable experience with the use of nitrogen mustard and similar agents in the treatment of carcinoma of the lung has accumulated. It is not easy to measure the effectiveness of some of these chemical agents, but they have provided some palliation, particularly in relieving obstruction of the superior vena cava and pleural effusion. Treatment with nitrogen mustard apparently is at least as effective as radiation therapy and its administration is easier and cheaper.

Conclusions

The results of treatment of carcinoma of the lung leave much to be desired. Nevertheless, an over-all 30 per cent 3 year survival rate after resection is not too bad when compared with survival rates in carcinomas at other sites. It is unlikely that surgeons can develop more effective operations or materially reduce the risk of operations for carcinoma of the lung as long as they continue to see such a large percentage of cases in which disease is far-advanced. Improvement in the results of treatment of carcinoma of the lung by present means can come only from earlier diagnosis and treatment. Earlier diagnosis and treatment would be possible if present knowledge of this disease and available diagnostic methods were used more effectively.

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Dr. Clagett, Section of Surgery, Mayo Clinic and Mayo Foundation, Rochester, Minn.

The popular designation of "malignant carcinoid syndrome" may be a misnomer, as many physicians believe that all carcinoid tumors are primary malignant neoplasms, albeit of low grade. A more accurate term might be "functioning adenocarcinoma, carcinoid type." A case of this type in which severe vascular reactions were reduced by administration of a chemotherapeutic agent (Thio-TEPA) is reported.

FUNCTIONING ADENOCARCINOMA

Carcinoid Type

RALEIGH R. WHITE, M.D.
Temple, Texas

SINCE THEY were described by Lubarsch[4] in 1884, tumors now classified as "functioning adenocarcinoma, carcinoid type" have been of great clinical and pathologic interest. The term "carcinoid," coined by Oberndorfer[5] in 1907, has been accepted almost universally although in recent years general agreement has been that these lesions are actually carcinomas of a low grade. Broders[2] has used the more accurate classification "adenocarcinoma, carcinoid type."

The origin of these intriguing tumors is uncertain. Some investigators[6] believe they originate from the Kultschitzky cells of the gastrointestinal epithelium and, therefore, may be found in any portion of the gastrointestinal tract from the gastrocardia to the anus. Others[2] suggest that the neoplasms arise from the basal layer of the gastrointestinal epithelium. These tumors occur most often as small submucosal nodules, often multiple and of yellowish color; but, the color may vary from brown to grayish white. Fortunately, they are slow-growing. The lesions appear most frequently in the appendix, with the jejuno-ileum as the second most common site. It is of surgical importance that carcinoid tumors of the small intestine metastasize frequently, whereas those in the appendix metastasize rarely.

Clinical Manifestations

In 1953 interest in carcinoid tumors was enhanced greatly by description of a new syndrome by Biörck and co-workers[1] and by Isler and Hedinger,[3] working independently. These tumors had a peculiar physiologic effect upon the smooth muscles of the respiratory tract, gastrointestinal tract, and arterioles. The resulting clinical picture is characterized by reddish-purple flushing, often with venous lakes in the neck, chest, and face. Watery stools, asthmatic attacks, and acquired tricuspid and pulmonic valvular lesions are frequent; and occasionally, sclerosis of the endocardium of the right atrium and right ventricle occurs. Thorson and others[11] first suggested

From the Department of Surgery of the Scott and White Clinic.

that these clinical manifestations might be attributable to production of large amounts of 5-hydroxytryptamine (serotonin) by the tumor.

Serotonin has the physiologic action of increasing gastrointestinal tone, with resulting hyperperistalsis and diarrhea. It causes constriction of the bronchioles with asthma and of the pulmonary arterioles with increased pressure in the pulmonary artery and right ventricle. Serotonin constricts the afferent glomerular arteriole and acts as an antidiuretic. It has an important effect on the peripheral vascular bed, causing dilatation of the small subcutaneous arterioles and constriction of the larger arteries.

Udenfriend and Titus[12] have described the metabolic pathway of serotonin. It is derived from dietary tryptophan, which is converted within the tumor or Kultschitzky cells first to 5-hydroxytryptophan, and then to 5-hydroxytryptamine or serotonin. This compound is secreted into the portal blood, where it is absorbed avidly by platelets and transported in an inactive form. Uncombined serotonin is deactivated by monoamine oxidase in the liver and in the lungs to 5-hydroxyindol acetic acid (5-HIAA), and is excreted in the urine as the final breakdown product.

Clinical manifestations of the carcinoid syndrome appear only with metastatic carcinoid involvement of the liver and/or retro-peritoneal lymph nodes, when the serotonin produced may by-pass the liver and enter the general circulation as an active agent. As much as 60 per cent of the available dietary tryptophan may be diverted into serotonin, causing a deficit of niacin and protein. Tryptophan deficiency in the carcinoid syndrome may be manifested by pellagra and hypoproteinemia. Tricuspid and/or pulmonic valvulitis and endocarditis[10] of the right side of the heart has been explained by the action of uninhibited serotonin before partial deactivation in the lungs.

The diagnosis of the carcinoid syndrome may be suspected when the clinical manifestations previously described are present, together with evidence of metastasis of the liver. It may be confirmed readily by determination of increased levels of 5-hydroxyindol acetic acid (5-HIAA) in the urine, as described by Sjoerdsma and co-workers.[9]

Treatment

Usually, treatment is surgical excision. Because of the tumor's slow-growing nature, palliative resection of the primary lesion should be considered although distant metastasis may be present. Patients with diffuse involvement of both major lobes of the liver and of the retroperitoneal nodes, disabled by effects of active serotonin, present a problem. In 2 patients with diffuse involvement of the liver, Wilson and Butterick[13] performed massive subtotal hepatectomy. The first patient was greatly relieved of symptoms, and returned to his occupation as a dairy farmer. The second died. It is difficult for a surgeon to become enthusiastic about massive resection of the liver for palliation only. The problem to be solved in this regard remains: "Does the end result justify the means?" Each patient must be considered individually and evaluated accordingly.

A satisfactory in vivo inhibition of serotonin to neutralize its action and relieve symptoms has not been developed.[7] Chlorpromazine therapy, of theoretical value, has not proved beneficial. If secondary pellagra is present, niacin administration may be helpful. Roentgen therapy usually is not beneficial. Chemotherapeutic agents such as triethylene thiophosphoramide (Thio-TEPA) should be given a trial.

Case Report

A man, aged 67, reported on September 13, 1955. Chief complaint was of intermittent diarrhea of 11 months' duration. For the previous month, the patient had had 6 to 8 watery stools daily. Dull, aching pain in the right lower quadrant had persisted for 3 months before admission. Unusual vascular phenomena had not been experienced.

The physical findings were noncontributory. Blood pressure was 120/70 mm. of mercury. The heart and lungs were normal and the skin appeared normal. A proctoscopic examination showed hemorrhoids, only. A series of roentgenograms of the gastrointestinal tract showed a filling defect about 4 cm. in diameter in the region of the ileocecal valve. A roentgenogram of the chest, complete blood count, and urinalysis were negative. The preoperative diagnosis was tumor, probably carcinoma, of the cecum.

Surgical treatment was performed September 23, 1955. After proper preoperative preparation, a right rectus incision was made. Exploration revealed a dilated terminal ileum with a 4 cm. tumor in the region of the ileocecal valve. Many lymph nodes were present in the mesentery of the right side of the colon and ileum. A lymph node at the root of the mesentery was excised and was reported to be "inflammatory." Radical resection of the right colon, hepatic flexure, right portion of the transverse colon and about 3 feet of the terminal ileum, with end-to-end anastomosis, was performed. Pathologic diagnosis was adenocarcinoma of carcinoid type, grade 2, with metastasis into at least 2 regional lymph nodes.

The patient's convalescence was satisfactory until 17 months after operation, when intermittent diarrhea developed. Blood pressure frequently was elevated to 200 mm. systolic, and on one occasion was 240 mm. At intervals he was extremely flushed.

Dr. Raleigh R. White, a surgeon in Temple, presented this paper before the Section on Surgery, Texas Medical Association, on April 12, 1960, in Fort Worth.

Two years postoperatively, the hot flushes and flushing with a purplish-red-hue were more pronounced and lasted from 30 to 45 minutes. Diarrhea had increased to from 8 to 10 watery stools a day. A mass, suggestive of an enlarged nodular liver, was palpated in the right side of the abdomen. The 5-HIAA urine test was positive. Roentgenograms of the chest were negative. In the hope that massive resection of the tumor would reduce the amount of circulating serotonin and afford some palliation, the patient was advised to have further surgical treatment.

On October 15, 1959, surgical exploration revealed widespread retroperitoneal metastases with diffuse involvement of both lobes of the liver. The bowel, *per se*, was not involved. To confirm the diagnosis, a metastatic node from the retroperitoneal area was excised and was reported to be adenocarcinoma, grade 2, carcinoid type. During the next 3 months, the patient was given Thio-TEPA (100 mg.) in divided doses.

On February 11, 1960, the patient had gained 2 pounds and felt better. Before the administration of Thio-TEPA, he was having approximately 6 to 10 daily episodes of severe flushing. His wife stated that she had not seen him have an attack since. He said that he had had a mild one each morning when he bent over to wash his face, otherwise none. Diarrhea still was present, but was less severe. Lymph nodes were palpable in each axilla and each supraclavicular space. Induration was noted in the abdomen, but a definite mass was not palpated. In the rectal shelf, there was a nodule. The patient had mild secondary anemia. Electrocardiograms were within normal limits. A cardiac lesion was not demonstrated.

Discussion

The development of the malignant carcinoid syndrome is primary evidence of the incurability of adenocarcinoma by present methods; however, because of the slow-growing nature of the neoplasm, worthwhile palliation may be achieved by surgical removal. Patients disabled by the severe effects of serotonin may be aided by massive subtotal resection of metastasis to the liver, which reduces the amount of circulating serotonin. Careful selection of patients is necessary to be certain that palliation achieved will justify the risks involved.

Partial resection of the liver was not undertaken in the case reported as the symptoms were not considered sufficiently disabling to warrant the procedure in a man 69 years of age. Carcinoid tumors usually are resistant to roentgen therapy. A chemotherapeutic agent, Thio-TEPA, was administered as an alternative procedure in the present patient. The flushing phenomenon was alleviated.

Chemotherapeutic agents deserve a trial in the case of carcinoid tumors unresponsive to other measures. Thio-TEPA as a chemotherapeutic agent was first reported by Shay and his associates[8] in 1953. It may be the agent of choice in patients with ovarian carcinoma. My associates and I have used it in more than 100 cases of various types of carcinoma to date, the results of which are inconclusive at present. The drug does appear to be of value in controlling effusion attributable to serosal involvement of carcinoma, and in perfusion therapy in selected patients. It was chosen to attempt to control not only the growth of the tumor but the production of serotonin in the present patient.

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♦ Dr. White, Scott and White Clinic, Temple.

The authors are of the opinion that fluorescence microscopy may prove an adjunct in large scale survey programs to detect cancers of the female genital tract. They report a comparative study of the technique with the Papanicolaou method, in which screening was performed by technicians not especially trained in cytology. Although the number of cases is insufficient to establish any profound observations, their study showed the same trends reported in the literature to date. All positive smears should be referred to a qualified cytologist for final interpretation.

A Comparative Cytologic Study

Acridine-Orange Versus Papanicolaou Technique

Preliminary Report

H. FRANK CONNALLY, JR., M.D., Waco, Texas, and
JOHN A. WALL, Houston, Texas

CYTOCHEMICAL RESEARCH has established the presence of two nucleic acids in tissue cells. Deoxyribonucleic acid (DNA) is found in the chromatin of the nucleus, and ribonucleic acid (RNA) in the cytoplasm and nucleolus. DNA remains invariable within the nucleus of any diploid cell of a given species, whereas RNA is noted in greater quantities in the cytoplasm of undifferentiated, proliferating, and secretory cells where protein synthesis is accentuated. Accordingly, the amount of RNA demonstrated in actively growing malignant cells far surpasses that of normal cells.[6]

The organic fluorochrome dye acridine-orange which has been utilized in histochemical studies on the nucleic acids was introduced in 1940 by Strugger.[6] Von Bertalanffy and Bickis, in 1956, reported a fluorescence microscopy technique employing acridine-orange which differentiated the two nucleic acids within a cell. A flaming red or orange fluorescence within the cytoplasm and nucleolus indicated large quantities of RNA. Green fluorescence of the nucleus established the presence of DNA.[4] Differentiation was proved by digestion with ribonuclease and deoxyribonuclease.[6]

Using an improved staining technique, von Bertalanffy, Masin, and Masin[5] reported their experience in exfoliative cytology with special reference to vaginal and cervical smears. These authors described the red-orange fluorescence of the cytoplasm and nucleolus associated with a yellow fluorescence of the nucleus in malignant cells. They further pointed out the pronounced difference in appearance of normal cells as compared to malignant ones.[5]

In a later publication von Bertalanffy, Masin, Masin, and Kaplan discussed the detection of gynecologic malignant tumors by means of the acridine-orange (AO) technique and reported on 403 cases. After evaluation by this method, each slide was destained and submitted for appraisal by the Papanicolaou procedure. It is assumed from this article that the two studies were comparable.[7]

In 1958 von Bertalanffy, Masin, and Masin pub-

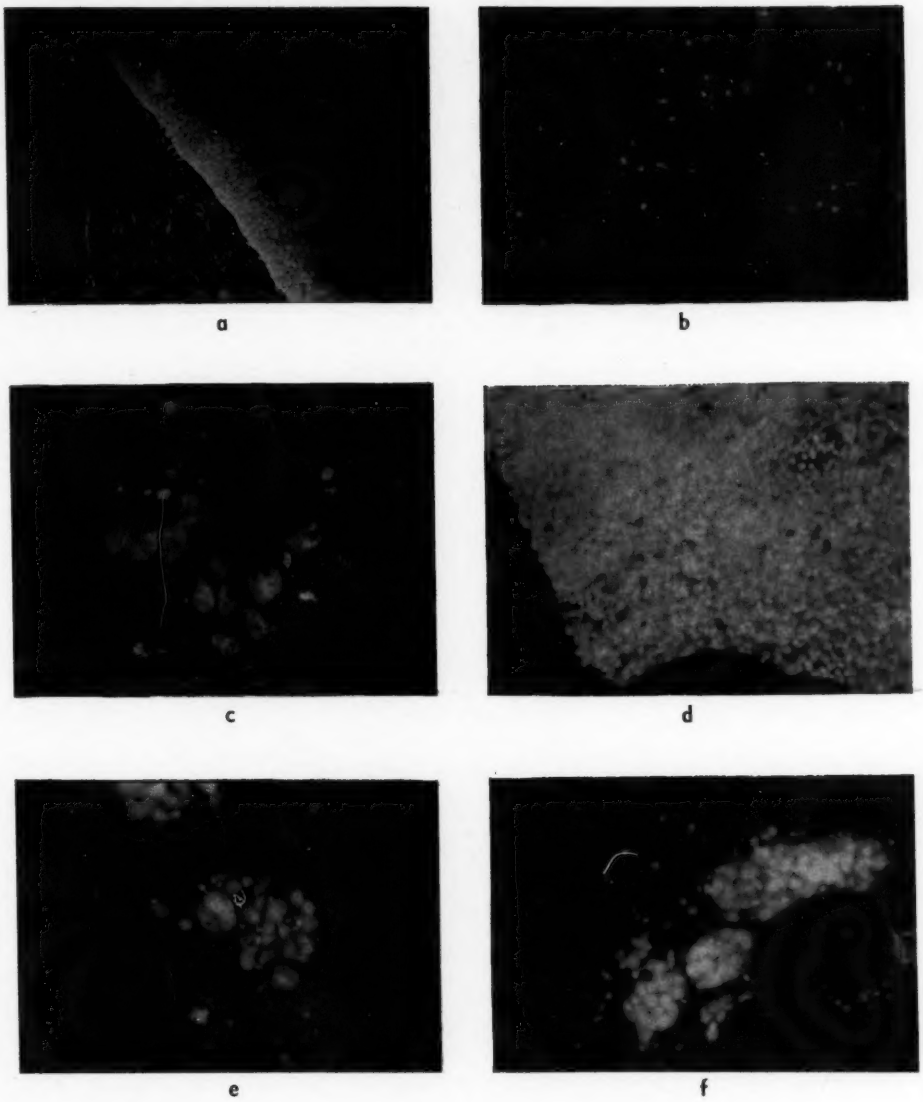

Fig. 1a. Normal cervical epithelium (x 20), illustrating deposition of acridine-orange in basal and parabasal cells and (slight) in intermediate cells. Cornified and precornified cells show no evidence of ribonucleic acid. **b.** Photomicrograph showing cornified and precornified cells in normal cervical smear. There is no evidence of ribonucleic acid (x 40).

c. A photomicrograph of active endocervical columnar cells, which shows small amounts of ribonucleic acid (x 40). **d.** A photomicrograph of tissue from a cervical biopsy in the case of a patient with squamous cell carcinoma. The ribonucleic acid content of the cells from the malignant tumor is greatly increased, as is evident in this picture (x 20).

e. Photomicrograph of cervical smear in squamous cell carcinoma with brilliant orange fluorescence of malignant cells. The ribonucleic acid content of the cytoplasm is markedly increased (x 40). **f.** Photomicrograph in adenocarcinoma of endometrium. The cells of the neoplasm show typical malignant changes, and they also demonstrate brilliant orange fluorescence (x 40).

lished a comprehensive review of the theory and technique of fluorescence microscopy employing the fluorochrome dye acridine-orange. Material from 598 gynecologic cases were examined. Of these, 150 specimens were from normal vaginas and cervices, 390 from "cervical lesions," and 58 from gynecologic cancers.[6] As in the previous study[7] the same smears were destained and reevaluated by the Papanicolaou method. The following results were recorded: (1) 1 false negative Papanicolaou smear AO positive and biopsy positive; (2) 2 false negative AO with Papanicolaou IV and V, biopsies positive; (3) 9 false positive Papanicolaou smears (IV and V) with AO negative and biopsies negative; (4) 2 false positive AO with Papanicolaou II, biopsies negative.

The authors stated "in all clear-cut cases of either normalcy or malignancy, the AO method applied to vaginal and cervical smears yielded a diagnosis identical with that obtained with the Papanicolaou method."[6]

In addition to the reliability of the AO technique, other advantages are cited:

1. The extra equipment necessary to follow this technique is readily available and inexpensive.
2. Only 6 minutes are required to stain a smear, which makes this a simpler and more rapid method than the Papanicolaou technique.
3. The brilliant polychrome picture against a black background reduces screening time. Suspicious cells are quickly recognized.
4. Demands on the skill of the screening technician are greatly reduced.[6]

The authors carefully suggest that all questionable smears be subjected to the Papanicolaou procedure for a "second independent diagnosis."[7]

Von Bertalanffy and Bertalanffy re-emphasized the importance of fluorescence microscopy[3] and indicated that this technique might well be employed in the physician's office. In a comparative study with both AO and Papanicolaou techniques, these authors gave the results shown in Table 1.

Sussman,[2] using a variation of the von Bertalanffy technique, reported on 1,037 gynecologic cases. In general, his results support those of von Bertalanffy.

Dart and Turner[1] also applied an alternate technique and cited results in 4,995 consecutive cervical and vaginal smears. Only the first 1,000 of the AO negative smears were reevaluated by the Papanicolaou technique. All AO positive slides were submitted for routine Papanicolaou study (Table 2).

TABLE 1.—*Comparative Study of Acridine-orange and Papanicolaou Techniques (von Bertalanffy and Bertalanffy[3]).*

AO Technique	(%)	Papanicolaou Technique	(%)
Negative	94.4	Negative	95.5
Positive	1.3	Positive	1.2
Doubtful	3.3	Doubtful	2.3

Of the 64 cases "with the cytologic criteria of malignancy" by the AO test, 54 remained the same by the Papanicolaou technique and 10 were suspicious. On the basis of these studies the Walter Reed Army Hospital has adopted the AO technique as a routine in the cytology laboratory.

TABLE 2.—*Results of Re-testing in 171 Cases in Which Acridine-orange Technique Gave Suspicious Results (Dart and Turner[1]).*

Papanicolaou suspicious	156
Papanicolaou negative	15*

*Seven of nine biopsies from these indicated carcinoma.

To date the investigators who have contributed to the literature on this subject have been well versed in the field of cytology. The purpose of this preliminary report is to evaluate the AO technique when it is performed by technicians who are not especially trained in cytology.

The senior author, Dr. H. Frank Connally Jr., of Waco is an obstetrician and gynecologist; his coauthor, Dr. John A. Wall of Houston, is a gynecologist. This paper was presented before the Section on Obstetrics and Gynecology of the Texas Medical Association in Fort Worth on April 12, 1960.

Materials and Methods

A total of 1,415 patients were screened. Two or more smears for each patient were placed immediately in alcohol-ether fixative. In 669 cases the Walter Reed staining technique was used.

1. Five dips each in 80 per cent ethyl alcohol, 70 per cent ethyl alcohol, 50 per cent ethyl alcohol, and distilled water.
2. Exactly four dips in 1 per cent acetic acid.
3. Immersion in distilled water for 2 minutes.
4. Immersion in McIlvaine's citric-acid-disodium-phosphate buffer at pH 3.8 for 3 minutes.
5. Immersion in buffered 0.01 per cent acridine-orange for 3 minutes with initial agitation.
6. Immersion in McIlvaine's buffer at pH 3.8 for 4 minutes for differentiation.
7. Dry and mount cover slip with buffer.

For more complete detail of this technique the reader is referred to the article by Dart and Turner.[1]

Routine screening was accomplished with an ordinary microscope. A Wratten G 15 (Kodak) filter was inserted in the ocular piece. A Corning glass filter # 5113 was placed in front of a light source generated by a 100 watt mercury vapor lamp.

A smear was considered to show positive fluorescence if deposition of acridine-orange in the cytoplasm and nucleolus exceeded normal as evidenced by the flaming red or orange color and if the cell *per se* was not obviously normal.

After interpretation by the AO technique, the same slides were destained in 50 per cent alcohol and submitted to a cytopathologist for routine Papanicolaou evaluation. The results are recorded in Table 3.

The second series of cases numbered 746. Again, all smears were fixed in equal parts of ether and alcohol. The staining technique applied was strictly that advocated by von Bertalanffy and associates.

TABLE 3.—*Results of Re-testing by Papanicolaou Method in 669 Cases in Which Walter Reed AO Staining Technique Was Used (Connally and Wall).*

Papanicolaou Classification	AO Positive	AO Negative
Class 1	21	518
Class 2	18	107
Class 3	2	1
Class 4	2	0
Class 5	0	0
	43(6%)*	626(94%)

*Malignant tumors confirmed by biopsy 3; in all 3 cases AO test results were positive (endocervical carcinoma 1, carcinoma in-situ of cervix 1, invasive carcinoma of cervix 1). In 1 of these 3 cases Papanicolaou test results were Class 3 and in 2, Class 4.

1. Smears are passed through 80 per cent, 70 per cent, 50 per cent alcohol and distilled water, being allowed to remain 5-10 seconds in each.
2. They are dipped four times in 1 per cent acetic acid and rinsed in distilled water 6-8 times.
3. They are placed in buffered acridine-orange 0.01 per cent for 3 minutes.
4. They are destained for 1 minute in phosphate buffer at pH 6.
5. They are placed in tenth molar calcium chloride solution 30-60 seconds for differentiation.
6. They are dipped 6 times in phosphate buffer at pH 6.
7. They are dried and cover slips mounted using 1 drop of buffer.[6]

In the first 466 cases the smears were classified as fluorescence positive if the deposition of acridine-orange in the cytoplasm was noted by the brilliant red or orange color, whether the cells appeared normal or otherwise. Interpretation by morphologic changes was rigidly omitted. The same slides were destained in alcohol and reclassified by the Papanicolaou technique. The results are recorded in Table 4.

The next group of 280 cases were stained in the same manner. The technician was allowed to exclude typically normal cells which might contain more than average amounts of RNA, such as endocervical, parabasal, and basal cells. This was accomplished, however, by a recheck of the smears but without altering the diagnosis applied by the technician. The results are shown in Table 5.

Our observations confirm those of other investigators[1, 2, 5, 6] in reference to Monilia and Trichomonas. These organisms stand out clearly with a red fluorescence. Routine screening has detected many cases which were clinically asymptomatic.

Conclusions

The material presented represents a preliminary report. Obviously, the number of cases is insufficient to establish any profound observation. However, the results showed the same trend as those recorded in the literature to date.

TABLE 4.—*Results of Re-testing by Papanicolaou Method in 466 Cases* in Which von Bertalanffy and Associates' AO Technique Was Used (Connally and Wall).*

Papanicolaou Classification	No. of Cases
Class 1	418
Class 2	33
Class 3	9
Class 4	5
Class 5	1

*Of the total, 123 (26%) were fluorescence positive, and 343 (74%) fluorescence negative.

Biopsies confirmed diagnosis of malignant tumor in 5 patients (carcinoma in-situ 3, invasive carcinoma of cervix 1, early carcinoma of endometrium 1). All 5 showed positive fluoresence, and of the 5, 4 were Class 4 by Papanicolaou testing, and 1 Class 5.

TABLE 5.—*Results in Re-testing by Papanicolaou Method in 280 Cases in Which von Bertalanffy and Associates' Technique Was Used (Connally and Wall).*

Papanicolaou Classification	Fluorescence Positive	Fluorescence Negative
Class 1	15	
Class 2	12	
Class 3	3	
Class 4	1*	
Class 5	0	
	31(11%)	249(89%)

*Biopsy confirmed this as carcinoma of cervix.

Smears from 1 patient with postmenopausal bleeding showed negative fluorescence and negative Papanicolaou test results; curettage indicated early adenocarcinoma of endometrium.

Although the technicians involved in this study were not initially trained in cytology, they rapidly acquired much fundamental knowledge of the AO technique and its interpretation. It is obvious that each is becoming increasingly more competent as a screener.

Fluorescence microscopy may prove an adjunct to large scale survey programs and to the busy cytopathologist who has difficulty in obtaining the services of experienced and well-trained screeners. The AO technique may also find its way to the forward "aid station," such as the small community hospital and clinic, where it would serve as the first echelon in a screening program. All positive smears would be referred to a qualified cytologist for final interpretation.

At this time it is our opinion that all positive AO smears should be destained and re-examined by the Papanicolaou technique.

The authors wish to acknowledge, with appreciation, the services rendered by Mr. M. Solorio and Mr. H. Wuthrich, who screened all smears.

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Dr. Connally, 1716 Colcord Avenue, Waco.
Dr. Wall, 6410 Fannin, Houston.

And therefore, I, William Bradford
(by the grace of God to-day,
And the franchise of this good people),
governor of Plymouth, say—
Through virtue of vested power—ye
shall gather with one accord,
And hold in the month of November,
Thanksgiving unto the Lord.

William Bradford, 1622.

Routine screening was accomplished with an ordinary microscope. A Wratten G 15 (Kodak) filter was inserted in the ocular piece. A Corning glass filter # 5113 was placed in front of a light source generated by a 100 watt mercury vapor lamp.

A smear was considered to show positive fluorescence if deposition of acridine-orange in the cytoplasm and nucleolus exceeded normal as evidenced by the flaming red or orange color and if the cell *per se* was not obviously normal.

After interpretation by the AO technique, the same slides were destained in 50 per cent alcohol and submitted to a cytopathologist for routine Papanicolaou evaluation. The results are recorded in Table 3.

The second series of cases numbered 746. Again, all smears were fixed in equal parts of ether and alcohol. The staining technique applied was strictly that advocated by von Bertalanffy and associates.

1. Smears are passed through 80 per cent, 70 per cent, 50 per cent alcohol and distilled water, being allowed to remain 5-10 seconds in each.
2. They are dipped four times in 1 per cent acetic acid and rinsed in distilled water 6-8 times.
3. They are placed in buffered acridine-orange 0.01 per cent for 3 minutes.
4. They are destained for 1 minute in phosphate buffer at pH 6.
5. They are placed in tenth molar calcium chloride solution 30-60 seconds for differentiation.
6. They are dipped 6 times in phosphate buffer at pH 6.
7. They are dried and cover slips mounted using 1 drop of buffer.[6]

In the first 466 cases the smears were classified as fluorescence positive if the deposition of acridine-orange in the cytoplasm was noted by the brilliant red or orange color, whether the cells appeared normal or otherwise. Interpretation by morphologic changes was rigidly omitted. The same slides were destained in alcohol and reclassified by the Papanicolaou technique. The results are recorded in Table 4.

The next group of 280 cases were stained in the same manner. The technician was allowed to exclude typically normal cells which might contain more than average amounts of RNA, such as endocervical, parabasal, and basal cells. This was accomplished, however, by a recheck of the smears but without altering the diagnosis applied by the technician. The results are shown in Table 5.

Our observations confirm those of other investigators[1, 2, 5, 6] in reference to Monilia and Trichomonas. These organisms stand out clearly with a red fluorescence. Routine screening has detected many cases which were clinically asymptomatic.

TABLE 3.—*Results of Re-testing by Papanicolaou Method in 669 Cases in Which Walter Reed AO Staining Technique Was Used (Connally and Wall).*

Papanicolaou Classification	AO Positive	AO Negative
Class 1	21	518
Class 2	18	107
Class 3	2	1
Class 4	2	0
Class 5	0	0
	43(6%)*	626(94%)

*Malignant tumors confirmed by biopsy 3; in all 3 cases AO test results were positive (endocervical carcinoma 1, carcinoma in-situ of cervix 1, invasive carcinoma of cervix 1). In 1 of these 3 cases Papanicolaou test results were Class 3 and in 2, Class 4.

Conclusions

The material presented represents a preliminary report. Obviously, the number of cases is insufficient to establish any profound observation. However, the results showed the same trend as those recorded in the literature to date.

TABLE 4.—*Results of Re-testing by Papanicolaou Method in 466 Cases* in Which von Bertalanffy and Associates' AO Technique Was Used (Connally and Wall).*

Papanicolaou Classification	No. of Cases
Class 1	418
Class 2	33
Class 3	9
Class 4	5
Class 5	1

*Of the total, 123 (26%) were fluorescence positive, and 343 (74%) fluorescence negative.

Biopsies confirmed diagnosis of malignant tumor in 5 patients (carcinoma in-situ 3, invasive carcinoma of cervix 1, early carcinoma of endometrium 1). All 5 showed positive fluoresence, and of the 5, 4 were Class 4 by Papanicolaou testing, and 1 Class 5.

TABLE 5.—*Results in Re-testing by Papanicolaou Method in 280 Cases in Which von Bertalanffy and Associates' Technique Was Used (Connally and Wall).*

Papanicolaou Classification	Fluorescence Positive	Fluorescence Negative
Class 1	15	
Class 2	12	
Class 3	3	
Class 4	1*	
Class 5	0	
	31(11%)	249(89%)

*Biopsy confirmed this as carcinoma of cervix.

Smears from 1 patient with postmenopausal bleeding showed negative fluorescence and negative Papanicolaou test results; curettage indicated early adenocarcinoma of endometrium.

Although the technicians involved in this study were not initially trained in cytology, they rapidly acquired much fundamental knowledge of the AO technique and its interpretation. It is obvious that each is becoming increasingly more competent as a screener.

Fluorescence microscopy may prove an adjunct to large scale survey programs and to the busy cytopathologist who has difficulty in obtaining the services of experienced and well-trained screeners. The AO technique may also find its way to the forward "aid station," such as the small community hospital and clinic, where it would serve as the first echelon in a screening program. All positive smears would be referred to a qualified cytologist for final interpretation.

At this time it is our opinion that all positive AO smears should be destained and re-examined by the Papanicolaou technique.

The authors wish to acknowledge, with appreciation, the services rendered by Mr. M. Solorio and Mr. H. Wuthrich, who screened all smears.

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Dr. Connally, 1716 Colcord Avenue, Waco.
Dr. Wall, 6410 Fannin, Houston.

And therefore, I, William Bradford
(by the grace of God to-day,
And the franchise of this good people),
governor of Plymouth, say—
Through virtue of vested power—ye
shall gather with one accord,
And hold in the month of November,
Thanksgiving unto the Lord.

William Bradford, 1622.

Electron Microscopy

The Invasive Properties Of Malignant Neoplasms

C. T. ASHWORTH, M.D.; F. J. LUIBEL, M.D.; and E. SANDERS

DALLAS, TEXAS

Knowledge of the transition from the preinvasive to the invasive stage of malignant neoplasms has heretofore depended on histologic studies with use of light microscopy. The authors report their personal experience with electron microscopic study of the early stages of such growths and describe several characteristic features of malignant neoplasia.

THE TRANSITION from the preinvasive to the invasive stage of malignant neoplasms is a phenomenon of the utmost clinical importance, having a bearing upon the therapeutic methods to be employed in a specific case. It is unknown whether this transition represents an alteration in the growth characteristics of the neoplastic cells or is simply an incident during the course of abnormal cellular growth and expansion. Knowledge of this phase of neoplasia has heretofore been dependent mainly upon histologic studies, using light microscopy. The need for visualization of the phenomenon of invasion by neoplastic cells at the level of electron microscopy is apparent. By this means it is possible to determine the relationship of tumor cells to invaded tissue components, nature of intercellular connections within the tumor, changes in the basement membrane, and relationship of neoplastic cells to adjacent tissue components during the invasive process.[1]

Material in the present study was obtained from cases of human malignant neoplasms at time of surgical removal or biopsy. Tissue was fixed in neutral buffered formalin and stained with hematoxylin-eosin, Alcian blue-Feulgen,[10] periodic acid-methenamine silver,[8] PAS-azure B.[7] Blocks of tissue also were obtained from parallel sites and prepared for electron microscopy by standard methods, employing chrome-osmium fixation[6] and methacrylate embedding. Sections obtained with the diamond knife at approximately 250 Å thickness were studied with an RCA EMU-3 microscope.

Tissue from the following malignant neoplasms were studied: squamous carcinoma of cervix in-situ; invasive squamous cell carcinomas of the cervix and skin; basal cell epithelioma of the skin; and invasive

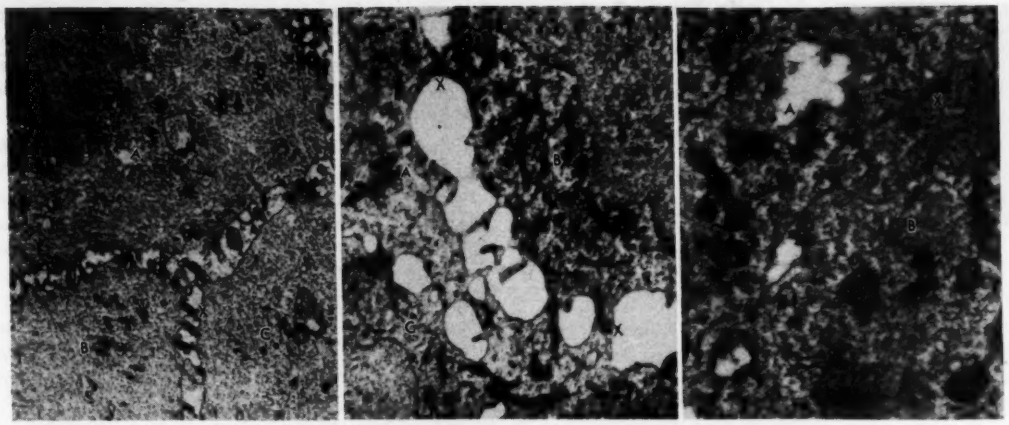

Fig. 1a. Normal cervical stratified squamous epithelium. Portions of separate cells are indicated by A, B, and C; intercellular bridges by X (x 3,125).

b. Intercellular bridges (X) in case of squamous cell carcinoma of skin of neck. Intercellular connections are less numerous and imperfect in structure (X). Portions of separate cells are indicated by A, B, and C (x 8,000).

c. Neoplastic cells (A and B) in basal cell epithelioma of the face. A few desmosomes (X) are present at sites of intercellular connection. These are similar to desmosomes of columnar epithelium, and entirely different from intercellular bridges of stratified squamous epithelium (x 12,500).

adenocarcinomas of the colon, stomach, thyroid, lung, breast, and kidney. In addition, normal tissue from these sites was studied for comparative purposes.

Results

No attempt will be made to discuss the changes which may be seen with electron microscopy in the nuclei or cytoplasm of malignant tumor cells. Instead, features which are probably related to the invasive process will be considered. These include observations on intercellular connections, loss of cohesive growth, basement membrane changes, and actual stromal penetration by neoplastic cells.

Intercellular Connections. Specific structural modifications that represent sites of intercellular adhesion are apparent in all normal epithelia which have been studied with electron microscopy. The structure of these connecting processes varies with the type of epithelium, and three types have been noted.

1. Intercellular bridges, also called "desmosomes,"[12]

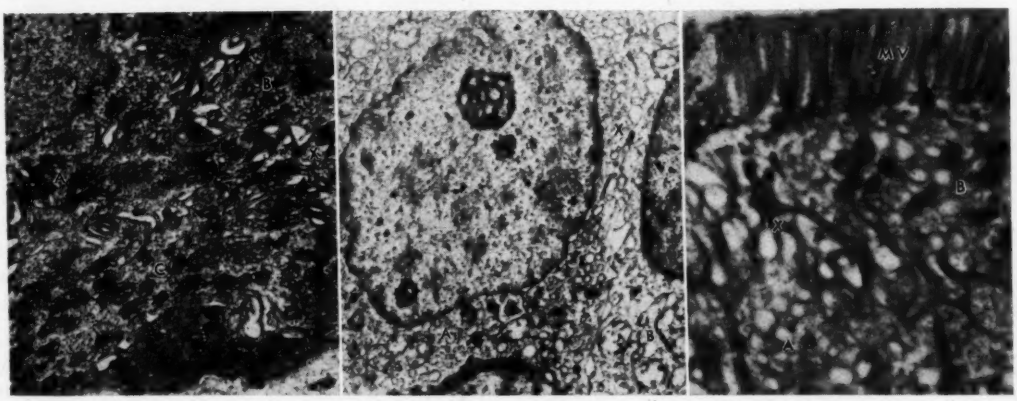

Fig. 2a. Normal mucosa of colon. Portions of individual epithelial cells are indicated by A, B, and C. Dense plaques (X) indicate type of desmosomes found in columnar epithelial cells (x 6,250).

b. Adenocarcinoma of stomach. Intercellular space between 2 adjacent tumor cells (A and B) is seen. Desmosomes are sparse in this neoplasm, but one is shown at X (x 6,250).

c. Normal mucosa of small intestine. Portions of separate cells are indicated by A and B; interlocking connecting processes at X. Microvilli (MV) are observed on surfaces of epithelial cells (x 12,500).

Dr. Charles T. Ashworth, the senior author, and his co-authors are affiliated with the Department of Pathology of the University of Texas Southwestern Medical School, Dallas. Dr. F. J. Luibel is a fellow of the American Cancer Society. **This paper was presented before the Section on Pathology of Texas Medical Association on April 12, 1960, in Fort Worth.**

are found in stratified squamous epithelium (Fig. 1a). They consist of trabeculae of cytoplasm containing electron dense plaques, which project into relatively wide intercellular spaces and coapt with similar processes from adjacent cells. The trabecular cytoplasmic processes remain separated from one another by narrow, uniform spaces approximately 100 Å wide. In squamous cell carcinoma of cervix and skin—both invasive and noninvasive—these intercellular processes are present, but are less numerous (Fig. 1b). Compared with those in normal squamous epithelium, they are variable in size and distribution. In some instances they are separated from adjacent trabeculae by abnormally widened spaces. The dense plaques in the cytoplasmic trabeculae may be absent. Intercellular bridges are present in the basal cells of normal stratified squamous epithelium, as well as in the basally placed cells of squamous cell carcinoma. They become more numerous and are better developed, however, in more highly differentiated cells. In basal cell epithelioma typical intercellular bridges are not seen. The intercellular connections are small dense plaques which resemble those of columnar epithelium (Fig. 1c).

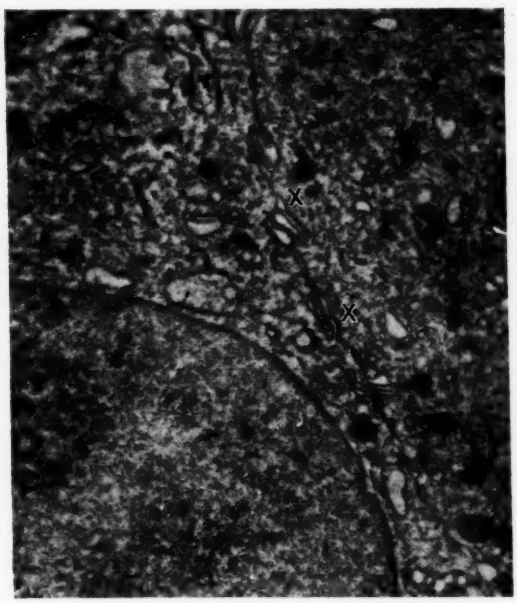

Fig. 3. Interlocking connecting processes (X) between adjacent neoplastic cells in bronchogenic adenocarcinoma metastatic to brain (x 11,750).

2. Between columnar epithelial cells, the usually narrow intercellular spaces are characterized by focal dense plaques, the terminal bars.[11] These are most prominent near the apical end of columnar cells and consist of densities of cytoplasm in adjacent epithelial cells about 300 mμ in size (Fig. 2a). They are separated from one another by a uniform space of about 100 Å width. Similar plaques are also sometimes found between the neoplastic cells of adenocarcinomas (Fig. 2b), but they are less numerous and sometimes incomplete in structure.

3. The third type of intercellular connection is also seen in normal columnar epithelium. It consists of a curved interlocking of cytoplasm (Fig. 2c), producing a peculiar semicircular folding at the cell membrane of two adjacent cells. It appears ideally disposed to produce a firm adhesive junction between adjacent cells. Although these are present in adenocarcinomas, they are sparse in these neoplasms and are variably and incompletely developed (Fig. 3).

Loss of cohesive growth in malignant neoplasia. In normal stratified squamous epithelium, the intercellular spaces are comparatively wide, measuring up to 2 μ in basal cell layer and decreasing to 0.5 μ in the cornified cell layer (Fig. 4a). In contrast, the intercellular spaces between columnar and parenchymal epithelial cells are uniformly narrow, measuring from 100 to 200 Å. The cell membranes of normal epithelium are smooth, with only occasional microvillous modifications in some special instances. In malignant epithelial neoplasms these intercellular spaces become variably widened (Fig. 4b). They are occupied by finely granular material, which is believed to represent the content of circulating tissue fluids. The cell membranes of malignant tumor cells sometimes exhibit villous-like outgrowths, and an increased number of cytoplasmic vesicles is noted at the periphery of the cytoplasm. Lipid droplets are occasionally observed in the cytoplasm, probably having been engulfed from the surrounding medium. These findings indicate a decrease in cell cohesiveness in malignant neoplastic growth, a tendency for cells to separate, and an increased cell membrane activity which probably is related to enhanced pinocytosis.

In the basal layer of cells in normal stratified squamous epithelium, foot-processes of cytoplasm protrude into the underlying connective tissue[2] (Fig. 5a). These projections are separated from the collagen by a basement membrane. Such an arrangement is suggestive of a stabilizing or holding effect upon the epithelial covering, perhaps accounting for the

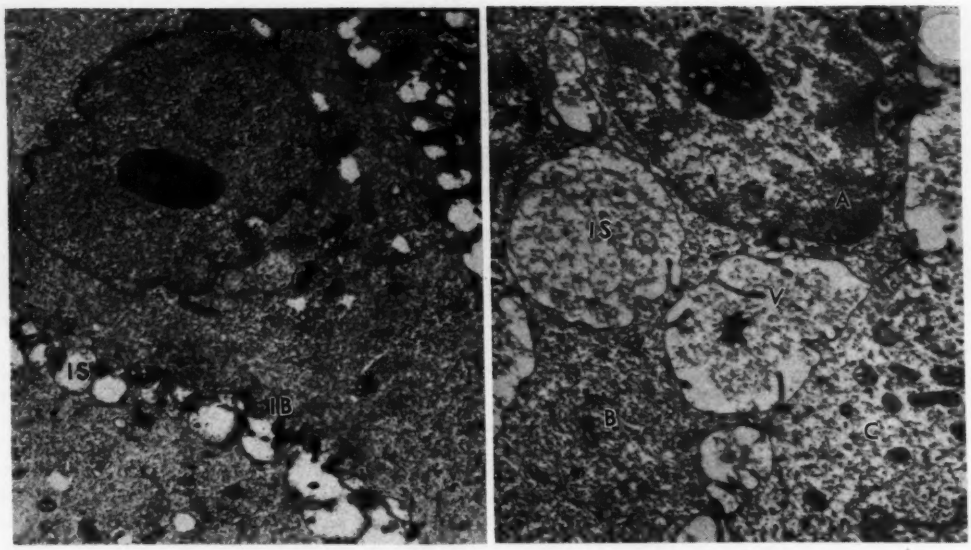

Fig. 4a. Normal stratified squamous epithelium of cervix. Intercellular spaces (IS) are of uniform width, averaging 2 μ. Intercellular bridges (IB) are noted also (x 9,000). **b.** In invasive squamous cell carcinoma of cervix, tumor cells (A, B, and C) are separated by abnormally widened intercellular spaces (IS). Villous projections (V), present on cell membranes, do not occur in normal cells of squamous epithelium (x 9,000).

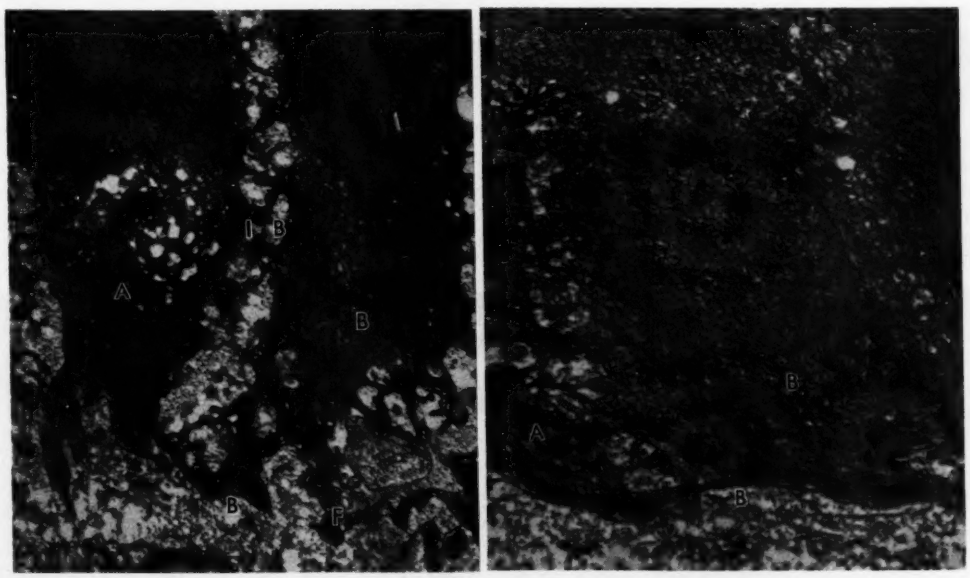

Fig. 5a. Normal stratified squamous cervical epithelium. Foot-like projections (F) of basal cells cause irregularity in contour of basement membrane (B). These foot processes give the impression of anchoring the epithelial layer. Intercellular bridges (IB) are noted between adjacent basal epithelial cells (A and B) (x 6,375). **b.** Squamous cell carcinoma in-situ of the cervix. Separate tumor cells in basal layer of neoplastic epithelium are indicated by A and B. Basement membrane (B) is intact but is straight rather than convoluted, as in normal squamous epithelium. This is result of absence of foot-like projections, present in normal epithelium (x 9,000).

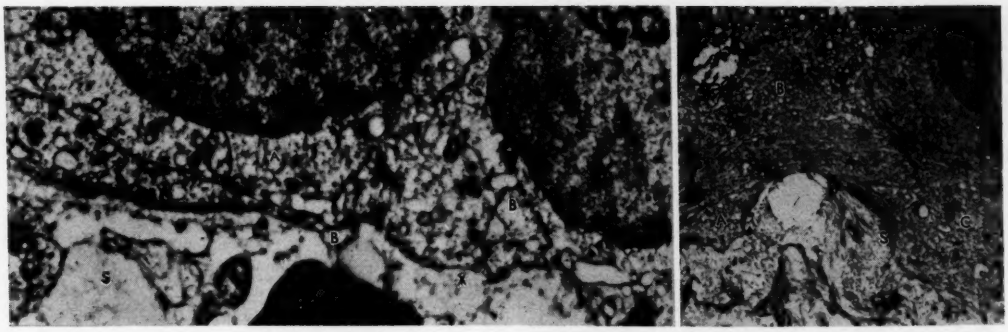

Fig. 6a. Invasive adenocarcinoma of stomach. Portions of cells (A and B) of deeply infiltrating tumor nest are shown. Basement membrane is present (B) at junction of tumor cells with stroma (S). Several imperfections in this membrane are present, however (X) (x 12,500).

b. Portions of tumor cells (A, B, and C) in metastatic bronchogenic adenocarcinoma to brain. At line of junction with stroma (S) no basement membrane is present. Some metastatic neoplastic cell groups, however, have developed a basement membrane (x 3,125).

tenacity of the normal epithelial covering to its underlying stroma. In contrast, in noninvasive squamous cell carcinomas of the cervix, these foot processes tend to disappear and a relatively straight line describes the contact between the epithelium and stroma.[9]

Basement membrane in malignant epithelial neoplasms. In normal epithelial tissue studied, with the exception of hepatic cells, a basement membrane of constant structure but somewhat variable in thickness, averaging about 300 Å, has been demonstrated. A basement membrane also can be demonstrated with histochemical methods for neutral polysaccharide material. In light microscopy the membrane is measurably thicker than that described with the electron microscope. This is probably explained by the fact that deposition of the staining substance upon the basement membrane causes the area of visualization to be increased in thickness. Also, the usual obliqueness of cutting through the laminar structure with thick (6μ) sections, as compared with the 1/40 μ sections employed in electron microscopy, helps explain this variability in thickness. In in-situ carcinoma the basement membrane remains intact but may be straight because of the absence of cytoplasmic foot projections (Fig. 5b). In invasive carcinoma, variable degrees of incompleteness, ranging to absence of basement membrane, may be seen (Fig. 6a). Also, the basement membrane near early invasive areas is sometimes thinner than normal, and vacuolated or fibrillated in structure. Nests of invading carcinoma cells, well removed from the surface areas may, however, be surrounded by incomplete or complete layers of basement membrane (Fig. 6b), whereas other nests of invading neoplastic cells are devoid of basement membrane. This phenomenon has been observed in several varities of invasive malignant neoplasms.

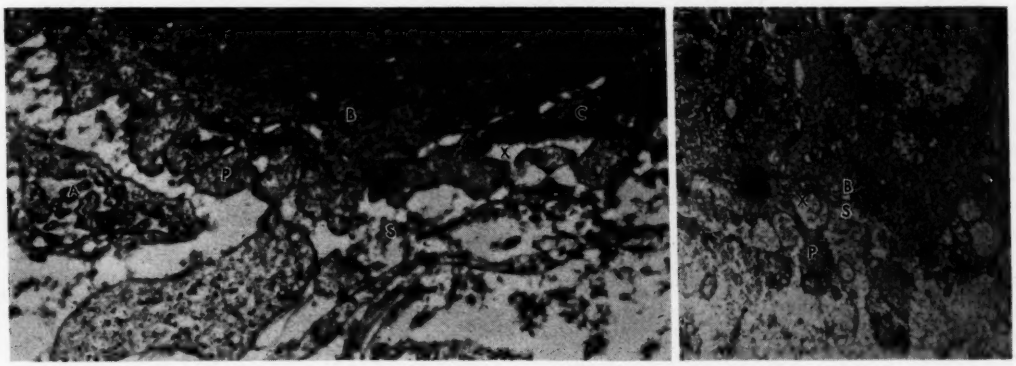

Fig. 7a. Invading squamous cell carcinoma of skin of neck. Portions of tumor cells are indicated (A, B, and C). Main line of junction with stroma (S) is indicated at X, where faint portions of basement membrane can be seen. Numerous bleb-like protrusions of cytoplasm (P) project into the stroma (x 8,000).

b. Early invasive adenocarcinoma of colon. Line of junction (B) with stroma (S) is noted. Remnants of basement membrane are observed (X). Protrusions of cytoplasm (P) of neoplastic cells into stroma represent earliest stage of invasion (x 6,250).

Malignant Cell Invasion. The actual process of invasion may occasionally be seen in electron microscopy. This necessarily occurs in cases of superficial carcinoma in which invasion is in an early stage. We have been able to study the phenomenon in a case of early invasive adenocarcinoma of the colon (Fig. 7a) and in early invasive squamous carcinoma of the cervix and skin (Fig. 7b). The earliest stage is observed as a focal defect in basement membrane and protrusion of a mass of cytoplasm, whereas the main cell body maintains its original position in the surface epithelial layer. In later stages a large mass of cytoplasm, or an entire cell, is found dislocated in the adjacent connective tissue stroma. Long streamers of cytoplasm of the malignant cell may be traced for surprising distances into the spaces between collagen fibers. There appears to be an increased amount of ground substance around these projecting cytoplasmic masses and, as indicated, basement membrane is absent.

Discussion

Increased rate of cellular growth is not *per se* sufficient explanation for the characteristic destructive behavior of malignant neoplasms. In normal reparative processes, non-neoplastic hyperplasias, and tissue differentiation in embryologic growth, the rate of cell proliferation may exceed that of most neoplasms.[5] Therefore, other explanations for the behavior of malignant neoplasia must be sought. The ability of neoplastic cells to become detached from the normal sites of growth, to extend locally into tissue spaces and set up new foci of growth, and to spread to distant sites appears to explain best the characteristic behavior of malignant neoplasia.

Through study of the morphologic aspects of neoplastic growth with electron microscopy, several features that have a bearing upon this invasiveness have been noted. The detachment of neoplastic cells from each other is favored by the widening of intercellular connections. Deficiencies in these connections may be attributed to the failure of neoplastic cells to undergo structural differentiation. Probably other factors of a chemical nature influence cellular adhesiveness. It has been suggested that calcium is related in some unknown way to cell-adhesiveness[4] and that local deficiencies of this substance may occur in malignant neoplastic cells, predisposing to their extension into the interstices of adjacent connective tissue.

The influence of basement membrane in restraining epithelium to its normal position can only be speculated upon at present. That disappearance of basement membrane is important in predisposing to invasion is suggested by several observations, however. Normal and non-neoplastic epithelium is always demarcated by a basement membrane. Focal defects occur in epithelium when it begins to undergo malignant neoplastic growth and invasion. In the earliest stages of invasion that have been visualized, no basement membrane is seen. Finally, imperfections in the structure of remaining basement membrane occur in malignant neoplastic growths. These observations suggest that, by some unknown means, malignant neoplastic cells effect lysis of the basement membrane material before invasion. Demonstration of an increased amount of hyaluronidase in malignant neoplasm is of interest in this regard.[3]

DIAGRAMMATIC REPRESENTATION OF EARLY NEOPLASTIC CELL INVASION

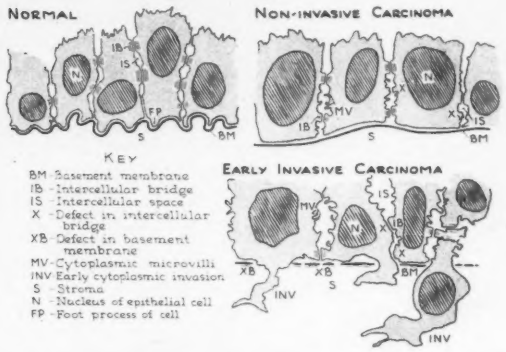

Fig. 8. Diagram illustrating steps in infiltration of malignant neoplastic cells, as suggested from electron microscopic studies.

Deeply located nests of malignant tumor cells may be surrounded by a basement membrane of variable completeness. This indicates that such invading cell nests produce, or cause to be produced from adjacent connective tissue, new basement membrane. The presence of basement membrane around invading cell nests has also been demonstrated histologically.[1, 13] This newly developed basement membrane might exert a temporary restraining effect upon the further growth of malignant cells.

The mechanism of invasion by malignant tumor cells may be envisioned to occur (Fig. 8) as follows:

1. Early in the process, basement membrane in a small area beneath in-situ malignant cells disappears.

2. The growth of tumor cells within the in-situ growth causes increased pressure on the individual cells. With increased capacity for cell membrane activity and cell motion, a slow but progressive protrusion of cytoplasm of a neoplastic cell into the interstices of adjacent connective tissue occurs.

3. This cytoplasmic extension gradually increases, imbibing nutritive fluid from the tissue spaces which are being encroached upon.

4. Ultimately, the main cell body emerges into the

interstitial tissue, having become detached entirely from its neighboring cells. Deficiency of intercellular connections between neoplastic cells facilitates this maneuver.

5. In the new site, the malignant cell prospers, grows, and divides, leading to a forward movement of the neoplastic growth into the host tissue, or producing an entirely new focus of neoplastic growth, disconnected from its original site.

Summary

Study of the early stages of malignant neoplastic growths with electron microscopy provides data that elucidate the mechanism of invasion. There are found deficiencies of intercellular connecting processes and evidence of decreased cell cohesiveness among the malignant cells. Loss of basement membrane is also demonstrable at sites of early invasion of malignant epithelial tumors. The process of early invasion is depicted as primary loss of basement membrane, decreased cell cohesiveness, and protrusion first of cytoplasm, then of an entire tumor cell into adjacent connective tissue spaces.

It is suggested that the property of invasiveness, based partially upon the described structural characteristics, comprises a major distinguishing characteristic of malignant neoplasia.

From the Department of Pathology, the University of Texas Southwestern Medical School, Dallas, Texas.

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Drs. Ashworth and Luibel and Mr. Sanders, 5323 Harry Hines Blvd., Dallas 35.

The authors report the fifteenth case of carcinoid tumor arising from Meckel's diverticulum. A chronologic review of previously reported cases is tabulated, and pertinent points are presented.

CARCINOID TUMOR OF MECKEL'S DIVERTICULUM

THOMAS F. CAMP, JR., CAPT., USAF (MC), and
ROBERT P. HAYS, M.D.
Dallas, Texas

IN THIS ARTICLE we report a case of carcinoid tumor orignating in Meckel's diverticulum. Only 14 cases of this lesion have been reported previously.

Case Report

G. A. T., a 50 year old white male, entered the hospital because of an acute flare-up of chronic duodenal ulcer disease. The patient also complained of intermittent, cramping pain in the right lower quadrant. He was hypertensive and had sustained 2 "strokes" within the past 6 months, each time with right hemiparesis that subsequently cleared. There was a long standing history of bronchopulmonary disease with chronic productive cough and intermittent severe dyspnea with wheezing precipitated by exposure to house dust and pollen.

Physical examination showed blood pressure readings fluctuating from 130/80 to 200/120 mm. of mercury, retinal arteriovenous nicking, expiratory musical rales throughout all lung fields, no evidence of cardiomegaly or valvular disease, a mild increase in right deep tendon reflexes, and a positive right Babinski sign. There was mild tenderness in the epigastric region and right lower quadrant. Sigmoidoscopic examination was negative.

Laboratory examinations showed normal hemogram, urinalysis, liver function tests, serum electrolyte levels, blood urea nitrogen, creatinine, phenolsulfonphthalein, and negative results in the serologic test for syphilis. Four stool specimens were guaiac negative. There was no 5-hydroxyindolacetic acid in the urine. Chest, excretory urograms, and skull roentgenograms were essentially negative. Three barium enemas were given to exclude a cecal "apple core" lesion reported on the first examination, but test results could never be interpreted satisfactorily as completely negative.

Hospital Course: After symptoms referrable to the ulcer resolved and results of the first barium enema were reported, the patient was transferred to the Surgical Service. Two repeated barium enemas could not exclude a cecal lesion. An exploratory laparotomy through a transverse incision in the right lower quadrant showed a normal cecum and colon but severe pyloric scarring from chronic duodenal ulcer disease. An incidental appendectomy was done. A Meckel's diverticulum, 5 cm. in length with a 2 cm. base and with no inflammation or adhesions, was excised. The diverticulum was opened and showed an 8 mm. whitish-yellow firm lump in the dome. No other lesions of the small bowel were noted. The postoperative course was essentially uneventful. Microscopic examination showed a "typical" carcinoid tumor."

From the Department of Surgery, the University of Texas Southwestern Medical School, and the Surgical Service, Veterans Administration Hospital, Dallas, Texas. Opinions expressed are in no way necessarily those of the USAF (MC).

Discussion

There are 14 cases previously reported in the world literature. The first case, by Hicks and Kadinsky[7] in 1922, was disavowed on review of the slides by Stewart and Taylor,[13] who called it "hetero-topic gastric mucosa." Pertinent information on reported cases in chronologic order is outlined in Table 1.

Carcinoid tumors arise from the Kultschitzky cells ubiquitously scattered throughout the gut and its appendages. These cells have characteristic granules between the nucleus and basement membrane that absorb silver stains, hence the synonym, "argentaffinoma." Incidence of carcinoids is highest in the appendix, where symptoms usually cause early removal before metastases occur. The next most frequent site is the small bowel, with more than 90 per cent located in the ileum. In 25 per cent of cases tumors are multiple, and they have metastasized in 75 per cent of cases by the time of operation. All carcinoids should be considered as malignant tumors, although of low grade.[4]

Capt. Thomas F. Camp, Jr., the senior author, is a former chief resident of the Veterans Administration Hospital, Dallas, where he wrote the article in collaboration with Dr. R. P. Hays, Chief of the Surgical Service.

Carcinoids in any location are small, firm, gray or yellow submucous nodules that move freely beneath the mucosa.[1] As size increases they may become polypoid, may assume an annular form, or may ulcerate. Regional lymph node metastases assume the gross characteristics of the primary tumor. Massive liver metastases may occur from relatively minute primary lesions.

Among the malignant tumors occurring in Meckel's diverticulum, carcinoids are second only to leiomyosarcoma.[4] The tumor is uniformly located in the dome of the diverticulum and is usually not evident externally. On cut section it is grossly indistinguishable from ectopic gastric or pancreatic tissue. With carcinoid of Meckel's diverticulum, no other coexistent primary sites have been reported. There is also a low incidence rate of metastasis from this site as compared to other sites in the small bowel, although this may easily be a function of the small series.

Besides its malignant nature, carcinoid is clinically important because of the complications of intermittent intestinal obstruction, intussusception, and perforation with peritonitis. The tumor may be an obscure source of gastrointestinal bleeding, or may need to be distinguished in differential diagnoses from a submucous rectal nodule. It is also of interest as it produces the "carcinoid syndrome" with variously present symptoms of peculiar episodic flushing, telangiectasis and cyanosis of the skin, chronic diarrhea, dyspnea, and cardiac valvular disease involving most frequently the pulmonary and tricuspid valves, but occasionally the mitral and aortic valves. With this syndrome there are liver metastases and an abnormally high urinary excretion of 5-hydroxyindolacetic acid, the metabolite of 5-hydroxytryptamine, or serotonin. This has not been described in any case reported as arising in Meckel's

TABLE 1.—*Summary of Pertinent Information in 14 Cases of Carcinoid Tumor of Meckel's Diverticulum.*

Author	Date Reported	Source of Material	With Diverticulitis	With Metastases
Stewart and Taylor[13]	Jan., 1926	Autopsy	No	No
Price[11]	July, 1935	Operation	Yes	No
Hertzog and Carlson[6]	Oct., 1935	Autopsy	No	No
Hertzog and Carlson[6]	Oct., 1935	Autopsy	No	No
Collins, Collins, and Andrews[3]	May, 1938	Operation	Yes	No
Ashworth and Wallace[2]	Aug., 1941	Autopsy	No	No
Paulter and Scotti[10]	Jan., 1951	Autopsy	No	No
Mrazek, Godwin, and Mohardt[8]	June, 1953	Operation	No	No
Mrazek, Godwin, and Mohardt[8]	June, 1953	Autopsy	No	No
Stoll[14]	Dec., 1953	Autopsy	No	Yes
Edwards[5]	July, 1956	Autopsy	No (Inferred)	No (Inferred)
Edwards[5]	July, 1956	Autopsy	No (Inferred)	No (Inferred)
Parnassa, Friedman, and Cincotti[9]	Oct., 1956	Operation	Yes	No
Rintala[12]	1958	Operation	No	No
Camp and Hays	1960	Operation	No	No

diverticulum. The one patient with metastases from a Meckel's diverticulum[14] died of hypertensive vascular disease but apparently without this syndrome.

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♦ Capt. Camp, 29497A, 48th TAC Hospital, A.P.O. 179, New York, New York.

Dr. Hays, Chief of Surgical Service, Veterans Administration Hospital, Dallas 16.

Large Urban Cities Draw Most Physicians

How United States physicians are reacting to shifts in the nation's population was reported in a recent issue of Medical World News. *It gave the following trends which were drawn from the preliminary results of the 1960 census:*

(1) Doctors continue to flock to the big urban centers. While population of the 50 largest cities increased only 5 per cent since 1950, physicians practicing in these localities rose by 23 per cent. Outside the big cities, doctors increased by 5 per cent, as against a 23 per cent jump in population.

(2) The ranks of physicians have swelled most rapidly in the booming cities of the South, Southwest, and Pacific Coast. But in any of these areas the population explosion has outstripped medical growth, so that doctors are scarcer than ever.

(3) MD's are by no means abandoning the big Eastern and Midwestern cities. Despite population declines in almost all these centers, physicians practicing in them increased in number—often substantially.

Leading all cities in medical growth during the past 10 years is Miami. Phoenix is second. Other cities where doctors have increased by more than 50 per cent include Houston, Long Beach, Seattle, El Paso, Tampa, Dallas, and Denver.

Physicians in search of greener fields might investigate San Diego, San Antonio, Fort Worth, Norfolk, Va., and Tulsa, Okla. All have ratios of better than 700 patients to one physician.

Evaluation of

Sphincter Preservation Operations For Cancer of the Rectum

ROBERT J. ROWE, M.D., and WALLACE BAILEY, M.D. Dallas, Texas

The historical background of sphincter preservation operations is recounted briefly; the term "sphincter preservation procedure" is defined, and the various techniques used are described briefly. The authors review a personal series of 41 patients with cancer of the rectum and rectosigmoid who were subjected to sphincter-preservation procedures. They conclude that such operations have a definite place in the treatment of patients with cancer of the rectum and rectosigmoid on the basis of comparative 5 year survival rates and excellent functional results.

THE VALUE of sphincter preservation operations for patients with cancer of the rectum still remains one of the most controversial of major surgical issues. During a period of residency training in 1946 and 1947 one of the authors (R.J.R.) became convinced of the superiority of functional results obtained by Bacon with the "pull-through" operation over those obtained with abdominal colostomy. Reports by Dixon[8] of excellent curative and functional results after anterior resection were impressive. In the ensuing years extensive criticism of the "pull-through" operation and of "anterior resection" prompted careful selection of patients for the re-establishment of bowel continuity after resection of the rectum and rectosigmoid for cancer.

From the Departments of Proctology, Baylor University Hospital and the University of Texas Southwestern Medical School, Dallas, Texas.

Since 1949 approximately 100 of the authors' patients with cancer of the sigmoid colon, rectum, anus or pelvic viscera have been subjected to radical resection. Abdominoperineal resection of the Miles type was employed for 50 patients. Various types of sphincter preservations were performed on 41 patients. A study of this latter series has been undertaken, together with a review of the results reported by other surgeons after radical resection of the rectum for cancer with preservation of the sphincteric mechanism of the rectal outlet. An effort has been made to determine the true functional results and curative value of these procedures.

Historical Background

Preservation of the rectal outlet and of fecal continence after extirpation of the rectum for malignant disease has been of great interest to the compassionate surgeon since the latter part of the nineteenth century. One cannot fail to marvel at the ingenuity and surgical skill manifested by men such as Kraske,[14] Cripps,[6] and Hochenegg,[12] who pioneered in the development, respectively, of posterior resection, anterior resection, and the pull-through operation for cancer of the rectum without the various technical aids available to the surgeon today. During the early part of this century efforts to devise satisfactory operations for preservation of a relatively normal rectal outlet continued. Most of these procedures fell into disrepute, and they were replaced almost entirely by the abdominoperineal resection with permanent colostomy, as advocated by Sir Ernest Miles in 1908.[16] However, efforts were continued to excise rectal cancer with preservation of some semblance of

the sphincteric mechanism. According to Dunphy, Cripps[6] performed the first anterior resection in England in 1897; Balfour employed a similar procedure in this country in 1910. Hochenegg[12] first described the abdominoperineal "pull-through" operation. Babcock, in 1932, and, subsequently, Bacon[1] popularized the "pull-through, over and under" or "proctosigmoidectomy." Almost simultaneously Dixon[8] and others[15] were improving the technique of resection of cancer of the sigmoid, rectosigmoid, and upper rectum with reestablishment of bowel continuity by end-to-end anastomosis. Despite much criticism these pioneers persisted in their efforts to evaluate these operations, and subsequently were supported by the favorable reports of Waugh and co-workers,[18, 19] Mayo and Fly,[15] and Black and Botham.[4]

Dr. Robert J. Rowe of Dallas is clinical associate professor of proctology at the University of Texas Southwestern Medical School. His co-author, Dr. Wallace Bailey, is a resident in the Department of Proctology of Baylor University Hospital. Their paper was presented in Fort Worth on April 12, 1960, before the Section on Surgery of the Texas Medical Association.

Definition

The term "sphincter preservation procedures" has been used to include the various operations designed to preserve all or part of the sphincteric apparatus of the rectal outlet. Dixon[8] deserves the credit for popularizing the term "anterior resection," which is applied to abdominal resection of the upper rectum or rectosigmoid colon, after which a low open or aseptic end-to-end anastomosis is performed. The open type of anastomosis is employed more commonly.

There are several "pull-through" procedures, the most common of which is the widely used "Babcock-Bacon" type of operation which they have termed "abdominoperineal proctosigmoidectomy." In this procedure the rectum and sigmoid are freed during the abdominal procedure in the usual manner with high ligation of the inferior mesenteric vessels, either with or without aorto-iliopelvic node dissection. This facilitates more extensive resection of the bowel. The terminal arcade is preserved approximately to the midsigmoid, or at the point at which colostomy ordinarily would be established. Bacon closes the abdomen at this point, and places the patient in the lithotomy position for perineal dissection, which is begun just outside the anorectal line and carried upward to meet the abdominal dissection. The levator ani muscles are partially removed but for higher lesions may be left intact. Waugh and co-workers[18] modified this procedure by reestablishing the pelvic peritoneal floor before closing the abdomen. One of us (R. J. R.) has modified further the Bacon technique by proceeding with the perineal phase before the abdomen is closed. The patient is placed in the lithotomy position at the completion of the abdominal phase (or has been placed in that position at the beginning of the operation) and the perineal dissection is performed. After the bowel is pulled through the dilated sphincter muscle and excised, the pelvic peritoneum is closed carefully around the bowel from the abdominal aspect to exclude the raw surfaces in the pelvis. This insures viability and proper position of the bowel for maximum resection. A small segment of the sigmoid colon is allowed to protrude from the remaining sphincter muscle and perianal skin. This is removed 8 to 10 days later, and a new muco-cutaneous junction established.

Black and Botham[4] employed a variation of the pull-through operation which they termed "abdominoendorectal" resection. The abdominal phase is accomplished in essentially the same manner as in the pull-through procedures, and a suture is tied around the bowel below the lesion. This is another modification of the Bacon procedure that has been employed by one of us (R. J. R.) in order to prevent cancer cell contamination in the perineal phase. The operation is then completed by dilating the anus widely and employing the electro-cautery to cut through the rectal wall approximately 3 cm. above the anorectal line. The freed bowel is then pulled through from above and excised; a small portion of sigmoid is left protruding from the anus and is excised 2 to 3 weeks later without being sutured.

Another type of "pull-through" procedure employed by one of us (R. J. R.) is termed "abdominoendoanal resection and anastomosis." The abdominal phase is accomplished in the same manner as for the other procedures. At its completion, the abdomen is left open with the patient in lithotomy position, the anus is dilated, and the bowel is everted (as in the Swenson pull-through operation for aganglionic megacolon). The everted bowel is incised approximately 4 cm. from the anorectal line and the proximal bowel is pulled through for perineal anastomosis. If the lesion and bowel is too bulky for removal from the perineal aspect, it is excised from above during the abdominal phase and the bowel is prepared for anastomosis, which is accomplished from the perineal aspect. This procedure has been employed in 2 obese octogenarians when improved sphincter action was deemed essential and the lesion was too low for adequate resection or accurate anastomosis from the abdominal aspect.

Other procedures have been devised, but these are the principal ones which have been used on enough patients for adequate periods of time to be of statistical significance.

Personal Series

From July, 1949, to March 1, 1960, sphincter preservation operations were performed by one of the authors (R. J. R.) on 41 patients. Twenty-four of these were operated on before March 1, 1955 (Table 4).

Fourteen patients were subjected to anterior resection with only 1 postoperative death. This occurred in an 80 year old white male who had had transversostomy for obstructing carcinoma of the rectosigmoid. Death was attributed to mesenteric vascular occlusion 4 days after resection and anastomosis. This was the only death in more than 100 consecutive resections of the sigmoid colon and rectum.

Five palliative resections were performed on patients with distant metastases. One patient died after a cerebrovascular accident and another (with apparent metastatic disease) after an injection by a "quack" cancer specialist. Only 2 patients died of residual cancer. The 5 year survival rate, although obviously of no statistical significance, was 66.2 per cent. Anterior resection has been performed on a total of 19 patients. Four major complications occurred, but no fatality. Small bowel obstruction occurred in 1 patient and postoperative wound dehiscence in another. Leakage at the anastomotic site required proximal colostomy in 2 patients, but the procedures were done early and secondary repair of the anastomoses was not necessary. Unusual distant metastases to the clitoris, anterior right portion of the vulva, and fifth lumbar vertebra occurred in 3 patients. Recurrence at the suture line was not present in any patient.

Abdominoperineal proctosigmoidectomy of the "Babcock-Bacon" type was performed on 20 patients from July 19, 1949, to November 24, 1959. Only 8 of these were performed before March 1, 1955 (Table 4). Six of these patients are living and well. Five have been operated on, respectively, 10 years and 6 months, 9 years and 8 months, 9 years and 8 months, 9 years, and 8 years and 10 months. There were no deaths in the entire group, and complications were relatively infrequent. There were only 2 major complications. One was a slough of the bowel above the sphincter muscle. This occurred in one of the patients operated on before high inferior mesenteric ligation and the change in technique of leaving the abdomen open until bowel viability is assured. Wound dehiscence occurred in 1 patient, and presacral abscess occurred in only 1 patient.

The 2 octogenarians previously mentioned, with lesions at 9 and 10 cm., were subjected to "abdominoendoanal resection and anastomosis." One was living and well 4 years and 4 months later. The other died 2 years and 6 months after resection with local and hepatic metastases. This procedure was used in these patients because a satisfactory functional result appeared more desirable than the ultimate in 5 year curability.

Review of Literature

During the past 15 years the controversy concerning the employment of sphincter preservation procedures for patients with cancer of the rectum has stimulated numerous excellent detailed studies of pathology and results of treatment. Such factors have been considered as size of neoplasms, gross appearance, modes of spread (intramural, lymphatic, venous), location with relation to the pelvic peritoneal reflection, extended node dissection, and, more recently, prevention of cellular contamination. It is impossible to review or recount all of the important data relevant to this discussion. Surgeons who cannot accumulate a large enough series to be of statistical significance must rely on impressions from their limited experiences and an honest appraisal of statistics of larger series of patients operated on by reputable surgeons.

TABLE 1.—*Anterior Resections: 5 Year Survivals.*

Author	Year	Distance From Anorectal Line	Number of Cases	5 Year Survival (%)
Dixon*[8]	1948	6-20 cm.	272	67.7
David & Gilchrist[7]	1949	·	27†	66.6
Mayo & Fly[15]	1958	6-14 cm.	428	60.0
Wheelock, Toll & McKittrick[20]	1959		90	51.1

*Included in series reported by Mayo and Fly.
†Above peritoneal reflection.

Tables 1, 2, and 3 compare the 5 year survival rates of the larger series reported recently by various authors. Mortality and morbidity rates are essentially the same for all of these procedures and have not been included. David and Gilchrist[7] emphasized the danger of the low lying rectal cancer, and obtained relatively poor results for lesions below the level of the peritoneal reflection. Ewing[9] came to the same conclusion. The pathologic studies of Kirklin, Dockerty, and Waugh[13] and the clinical results of

others (Table 1 and Table 2) apparently refute the importance of this relationship. Bacon[2] and Mayo and Fly[15] reported almost identical and improved 5 year survival rates (Table 3) in patients in whom lesions were 0 to 6 cm. from the anorectal line. Comparison of 5 year survival rates after the Miles abdominoperineal resection and after the sphincter preservation procedures for lesions situated at the same levels reveals almost identical results (Tables 1, 2, and 3). No significant difference could be noted, regardless of the incidence of nodal involvement. In the Memorial Hospital series[17] the addition of extended node dissection did not yield a significant improvement in survival rates to compensate for

TABLE 2.—*Abdominoperineal (Pull-Through Procedures): 5 Year Survivals.*

Author	Year	Distance From Anorectal Line	Number of Cases	5 Year Survival (%)
Bacon	1959	6-? cm.	656	55.1
Waugh & Turner[19]	1958	5-10 cm.	131	52.7
Black & Botham[4]	1958	6-12 cm.	30	53.0

the additional morbidity and mortality. Bacon[3] achieved a similar improvement percentagewise, but came to no definite conclusion as to the merit of this procedure.

Complications and mortality rate in the larger series are relatively the same. In all of the series of sphincter preservation procedures there was a selection of patients which makes any comparison of these operations inaccurate. However, over all, the 5 year survival rates in these patients apparently were better than those reported after the Miles' operation. Whether this improvement will compensate for the selection of patients is a moot question. Perhaps the most significant comparative results are in the Mayo

TABLE 3.—*Abdominoperineal Resections (Miles): 5 Year Survivals.*

Author	Year	Distance From Anorectal Line	Number of Cases	5 Year Survival (%)
David & Gilchrist[7]	1949		140	54.3
Grinnell[10]	1953		366	46.4
Mayo & Fly[15]	1956	0-5 cm.	254	50.0
		6-14 cm.	317	53.0
		0-20 cm.	580	51.7
Cattell & Swinton[5]	1959		376	44.7*
Bacon[2]	1956	0-6 cm.	119	49.5
Stearns & Deddish[17]	1959	0-20 cm.	564†	50.0

*Absolute 5 year survival.
†442 cases, Miles (46%); 122 cases, extramesenteric node dissection (54%).

TABLE 4.—*Personal Series: 5 Year Survivals.*

	Anterior Resection	Pull-Through
Total number of cases operated prior to 3-1-55	14	8
Postoperative deaths	1	0
Palliative resections	5	0
Died of other causes	2	0
Untraceable	0	0
Died of cancer	2	2
Alive and well 5 years—no disease	4	6
Percentage 5 year survival	66.2%	75%

Clinic group of patients with lesions situated between 6 cm. and 14 cm. (Tables 1 and 3). The 5 year survival rate after anterior resection in 428 patients was 60.0 per cent, and in 317 patients subjected to the Miles' operation, 53.0 per cent.

If one can rely upon these figures, results from the sphincter preservation operations are equal, if not superior, to those obtained after abdominoperineal resection with colostomy. Apparently, then, decision as to the value of sphincter preservation operations depends upon the final functional result. In the authors' opinion, many excellent surgeons have been prejudiced against them. They are more difficult to perform, but once the technique is mastered, the functional result and gratitude of the patient is worth the additional effort. The superiority of the functional result after anterior resection is unquestioned.

Although this personal series is too small for any conclusions regarding 5 year survival rates, it has strengthened the opinion of one of the authors that the "pull-through" operation gives superior functional results. The incidence of impotence approaches 95 per cent after the Miles' abdominoperineal operation, as compared to 12.2 per cent in patients who have the "pull-through" operation. Fecal continence and the act of defecation obviously are not normal. Almost all patients irrigate the transplanted bowel (not after anterior resection) daily or every other day, can control gas and feces, and do not have to wear any type of pad. Two patients have been able to defecate without the aid of irrigations. Even the biased will admit that this is preferable to abdominal colostomy.

Conclusions

From personal observation and review of the results obtained by others, the authors conclude that sphincter preservation procedures—anterior resection with end-to-end anastomosis, abdominoperineal proctosigmoidectomy of the "Babcock-Bacon" type of "pull-through," and abdominoendoanal resection and anastomosis—have a definite place in treatment of

patients with cancer of the rectum and rectosigmoid. Anterior resection should be used for lesions at or above the 12 cm. level, or as a palliative operation for lower lesions. At least 6 cm. of bowel should be excised distal to the lesion. The "pull-through" procedure should be employed for lesions above the 6 cm. level and below the 12-14 cm. level if anterior resection can not be performed with ease. It is contraindicated for large lesions in which the lymphatic vessels may be blocked. It is especially useful for the large villous (papillary) adenomas which on biopsy examination are negative for carcinoma but which because of their size require resection of the bowel. Endoanal resection and anastomosis has a limited use for similar lesions in older patients in whom daily irrigations are to be avoided. High inferior mesenteric ligation should be employed with all of these procedures. At present extended iliopelvic and aortic node dissection is indicated only in selected cases.

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Dr. Rowe, 112 Doctors Bldg., 3707 Gaston Ave., Dallas 10.

Dr. Bailey, Baylor University Hospital, Dallas.

Malignant Melanoma of the Iris

Although a good case might be built for watchful waiting in cases of malignant melanoma, the author does not believe it is proper unless diagnosis is in doubt. As much as possible should be learned about the extent of the lesion before excision, and the patient should be told in advance that enucleation may be necessary if the tumor extends beyond the iris. The author reports 3 personal cases.

MAX BALDRIDGE, M.D. TEXARKANA, TEXAS

COMPARATIVELY little has been written about melanoma of the iris. Lesions of this kind are rare enough to make statistical analysis difficult. Most cases either are isolated or are brief references in a report of uveal malignant melanoma. To cite a few such reports, Callender, Wilder, and Ash[2] mentioned 32 cases of malignant melanoma of the iris in reporting a follow-up study of 500 cases among 1,600 cases of malignant melanoma of the uveal tract. Benjamin and co-workers[1] analyzed follow-up studies of 250 uveal malignant melanomas in which there were 5 tumors of the iris. Of these, 1 patient had died of metastasis after 2 years, and 1 of cerebral vascular accident after 12 years; the other 3 were alive after 6, 14, and 20 years, respectively.

Deen[3] studied 66 eyes containing uveal malignant melanomas, 5 of which were tumors of the iris. All of these lesions had extended beyond the iris. Follow-up study was not sufficiently long in this series for a complete report.

A much more complete and useful evaluation of these tumors was made by Reese and Cleasby.[9] Their report furnishes an excellent, practical guide. They evaluated 157 cases of melanoma of the iris, discussing the manner of treatment and the outcome. They pointed out the relatively low malignant potential of most of these tumors, and gave an excellent discussion of treatment criteria. In only 4 of the 120 cases which could be followed did death occur from metastatic spread. In all 4 of these enucleation had been performed. Three of the 4 patients had had previous iridectomy, and in each instance the tumor had spread beyond the reach of local excision.

Many isolated reports are interesting, but give insufficient information to allow generalization. One such report by Koenig[7] concerns a malignant melanoma of the iris in the only eye of a patient who had follow-up study for more than 20 years. During this time radiation had had no apparent effect except to hasten the development of an incipient cataract. The cataract was removed and the patient lived several more years with corrected vision of 20/20. She died of other causes, and the diagnosis of malignant melanoma of the iris was made post mortem.

Esposito[4] presented 2 cases with interesting historical and other data. Reese[8, 9] has contributed greatly in the study of these tumors. Fuchs[5] stated more than 75 years ago that malignant melanoma of the

iris accounted for 6 per cent of uveal malignant melanomas. This incidence seems to have been reasonably well confirmed.

Several presumptions have been gathered from these and other sources.

1. Malignant melanoma of the iris may be considered less malignant, in general, than malignant melanoma of the ciliary body or choroid.

2. Once such a lesion has invaded either the ciliary body or choroid, prognosis is not different than if it had been primary at these sites.

3. Malignant melanoma of the iris may occur as discrete, single, or multiple tumors which sometimes seed other implants into the angle or onto the surface of the iris. They are sometimes diffuse lesions of the entire iris, recognized by growing brownish coloration of the iris and frequently by secondary glaucoma. This latter type of tumor appears to be one of the most difficult to recognize. It is apparently often confused with heterochromia iridis or anisochromia.

Dr. Max Baldridge, Texarkana ophthalmologist, presented this paper before the Texas Ophthalmological Association in Fort Worth on April 11, 1960.

4. Discrete tumors can often be completely excised with little or no interference with vision. The criteria for excision rather than enucleation are based on whether the tumor has remained in the iris and has not invaded its root, and whether it is discrete rather than diffuse. It must not have seeded multiple implants about the surface of the iris. Before surgery, the angle should be examined with the gonioscope if possible, and permission obtained to enucleate if the tumor extends beyond the iris.

The technique of excision has been well covered by Kirby[6] and many others. In general, it is the same as for iridectomy for other cause. A useful modification is that the incision into the anterior chamber should be as far back from the limbus as it can be placed and still enter the angle. It should be lengthened sufficiently to allow a large segment of the iris to be drawn out of the anterior chamber.

When a lesion is small, it may be difficult to differentiate from a benign melanoma or iris freckle. Carefully controlled photography can be useful in follow-up studies of such lesions.

Case Reports

In 3 cases of tumor of the iris, excision was performed by the author.

CASE 1.—Mrs. E. I., age 49, white, was seen March 20, 1947, with a massive hyphema in the right eye. There was slight discomfort, and intraocular tension was 33 mm. in the right eye and 19 mm. in the left (Schiotz). Hemorrhage had evidently occurred that morning. Within 2 days there had been enough absorption to reveal an elevated red lesion in the iris near the pupillary margin at 6 o'clock, extending angleward in its long axis and measuring approximately 3 by 1½ mm. There was no evidence that it extended into the angle. Dark color was visible, but the lesion did not appear melanotic in the usual sense.

On April 6, 1957, the tumor was excised by iridectomy without difficulty. Microscopic sections showed what appeared to be spindle cells which were not classified, but which appeared to be type B. The patient has been examined frequently since, most recently on March 21, 1960. At that time there was no evidence of recurrence. The fundus was clear, and vision was 20/20 in the eye which had been operated upon, with correction of +.25 +.75 axis 180.

CASE 2.—Mrs. E. M., aged 68, white, was seen June 18, 1956. A darkly pigmented mass in the iris of the right eye occupied a wedge shaped segment at 8 o'clock. The iris was elevated and thickened and there was an ectropion of the pigmented layer.

On November 2, 1957, the patient was re-examined. There had been little change during the preceding year and a half. The lesion occupied about 50 or 60 degrees of arc at its base, which was near but not into the angle. It was removed November 15, 1957, with no difficulty. Microscopic sections showed spindle cells, probably type B. On December 30, 1957, corrected vision was 20/25, the same as for the left eye, and the lens was of slightly less power than that for the left eye. There was no evidence of recurrence or incomplete excision when the patient was last seen April 15, 1960.

CASE 3.—Mrs. O. M., age 69, white, was seen January 16, 1958, with a history of failing vision for one year. Examination showed that she had bilateral immature cataracts. Visual acuity with correction was 20/300 for the right eye and 20/200 for the left. The intraocular tension was normal. A darkly pigmented tumor extended from approximately 4 o'clock to 5 o'clock in the iris of the left eye, reaching from the sphincter to a point about two-thirds the distance to the angle in this meridian. There was no evidence on gonioscopic examination that the tumor had extended into the angle.

The patient was advised to have excision of the lesion, with probable removal of cataract at the same time; the possibility of enucleation instead of excision was mentioned if extension of disease was found at surgery. She elected instead to have cataract surgery on the right eye, and this was done March 19, 1958. Recovery was uneventful and the visual result was good.

The tumor of the iris appeared to be unchanging in the next six months. On October 2, 1958, this lesion was excised, with simultaneous cataract extraction. The visual result was excellent. The pathology report confirmed the diagnosis. The type cell was reported as spindle cell.

When the patient was last seen on December 11, 1959, no evidence of recurrence was found. Vision, with correction, was 20/25 in each eye. She appeared to have binocular vision.

Summary

There are several important considerations for the patient with melanoma of the iris.

Nothing should be left undone in attempting to judge the extent of this type of growth. There is seldom reason for haste. Many of these tumors have been observed for years, even though they were large to begin with. In no such case reported has death been attributed to metastasis. In a number of cases in which an ill-advised attempt at excision was carried out, metastasis and death did occur. Statistically, a good case could be built for watchful waiting in all such cases. Nevertheless, I do not believe it is proper except in cases in which there is a great deal of doubt as to diagnosis.

If local excision is elected, the possibility of enucleation, if it becomes necessary, should be discussed in advance with the patient or responsible person. The surgical approach should be optimal. The angle should be entered at the most posterior position possible, and the incision should be enlarged enough to allow plenty of space to work easily. In most instances this incision should be about 1½ mm. posterior to the limbus and should occupy nearly 180 degrees of circumference, approximately the same as for cataract extraction.

The term low malignant potential simply means relatively delayed metastasis. This means that age has an important bearing on the type of treatment advised. A youth or young adult should hardly be advised not to have such a tumor excised. In contrast, an elderly person with a well localized, "silent" tumor might rationally be advised to keep it.

When these lesions are removed, the tissue should be spread out and pegged on a small piece of wood, such as a tongue depressor, before it is fixed in formalin. Otherwise it is difficult to identify the edges in pathologic study to judge whether removal was complete.

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Dr. Baldridge, P. O. Box 1334, Texarkana.

Americans Average 4.8 Doctor Visits

American women see their doctors and dentists more often than men, but the average American visits his physician 4.8 times a year and his dentist 1.5 times, according to a report from the United States National Health Survey.

	PHYSICIAN	DENTIST
Women	**5.5**	**1.7**
Men	**3.9**	**1.3**
Average	**4.8**	**1.5**

Deafness and otalgia are two of the commonest symptoms that cause patients to report to the otolaryngologist. The author emphasizes the importance of these cardinal symptoms as early diagnostic clues in malignant tumors of the nasopharynx.

Otologic Findings in Nasopharyngeal Carcinoma

H. E. MADDOX, III, M.D. HOUSTON, TEXAS

STAFF MEMBERS of the Ear, Nose and Throat Clinic of the University of Texas Medical Branch have had the unpleasant experience during the past few years of diagnosing 21 cases of a disturbing type of serous otitis media. The usual complaints of "blocked ear," "deafness," and tinnitus were present in each case. Also, the tympanic membranes were typical in appearance. What, then, was so disturbing in this group of patients? This unfortunate type of serous otitis media carried almost a 90 per cent mortality rate! Only 3 of these 21 patients are alive today.

Obviously, the fluid in the ear in each of these patients was, as so often is the case, a secondary symptom of a more serious primary condition. These 21 patients represented a part of a larger group of 35 in whom carcinoma of the nasopharynx was diagnosed. A complaint referable to the ear was the initial symptom, or the symptom which prompted the patients to seek medical advice in more than half of this series of 35 cases. The failure of the physician to recognize the early symptoms of this condition, together with the highly malignant nature of the tumor, contributes to the extremely poor prognosis in the majority of cases. This failure to recognize the early signs of this tumor, as well as the failure to initiate aggressive diagnostic measures, falls squarely on the shoulders of the otologist. Even today, when the surgical boundaries of head and neck cancer are disputed openly by several different categories of "specialists," the remote nasopharynx remains solely within the otolaryngologist's domain. For this reason he is the only one who can make the definitive diagnosis of a malignant growth in the area. A thorough knowledge of anatomy is essential for diagnosis in this condition, in which invasion of the base of the skull with resulting multiple cranial nerve syndromes is so common.

Anatomy of the Nasopharynx

The nasopharynx connects the nasal fossa with the meso or oropharynx. The lumen is approximately 14 or 15 square centimeters. The roof of the nasopharynx and its posterior wall are in continuity. At the junction of the mucous membrane of the roof and posterior wall, the pharyngeal tonsil or adenoid is found as a more or less pronounced mass of lymphoid tissue with radial mucous membrane folds. The pharyngeal tonsil constitutes the most cranial portion of Waldeyer's ring of lymphatic tissue. The lateral wall of the nasopharynx is dominated by the medial ori-

fice of the eustachian tube, which is a semilunar or vertical cleft directed downward and forward with a more bulging posterior limit of fibroelastic cartilage. Immediately posterior to the eustachian tube orifice is the fissure-shaped entrance to the 6 to 8 mm. deep pharyngeal recess or fossa of Rosenmuller.

The limit of the nasopharynx on the external base of the skull is marked by the insertion of the pharyngobasilar fascia. This structure follows a line from the pharyngeal tubercle on the basilar process of the occipital bone in an anteriorly convex curve to the petro-occipital fissure. From there it extends across the inferior surface of the pyramid, medial and anterior to the external carotid foramen (area of origin of levator veli palatine) to the sphenopetrosal fissure just posterior to the foramen ovale, then anteriorly and medially to medial lips of the scaphoid fossa and the medial lamina of the pterygoid process.

If the insertion of the pharyngobasilar fascia is projected onto the internal base of the skull the course is as follows: from about the middle of the clivus in a lateral direction over the petro-occipital fissure; then across the tip of the pyramid to the sphenopetrosal fissure; and finally anteriorly, between the foramen lacerum and the foramen ovale and spinosum, toward the root of the ala magna.

Anatomy of Adjacent Region

The various routes of spread of tumors from the nasopharynx are best explained by first giving a brief description of the anatomy of the surrounding region.

1. Expansion in a forward direction involves the nasal cavity, as well as the different conchae, and possibly the ethmoid cells and eventually the maxillary antrum.

2. In a backward direction the retropharyngeal connective tissue space, the prevertebral fascia, and the muscles may be invaded. If the tumor passes through these barriers, the spinal cord may be invaded.

3. In a downward direction the soft and hard palate, and later the palatine arches and base of the tongue, may become involved.

4. Of considerable interest is extension of tumor in a lateral direction to the deep portion of the retromandibular region, which is bounded anteriorly by the pterygoid plate and the external and internal pterygoid muscles. Trismus may be produced by infiltration of these muscles. In this retromandibular region the palatal muscles may be infiltrated, with resultant weakness of palatine function. Such weakness may also occur secondary to lesions involving the innervation of these muscles, especially the levator veli palatini. The mandibular division of the fifth cranial nerve is located here, and involvement of its two main branches—the lingual nerve and the inferior alveolar nerve—will result in dental pains.

Just posterior and medial to the muscles that originate from the styloid process lies the carotid artery and the jugular foramen, from which emerges the internal jugular vein, accompanied by the ninth, tenth and eleventh nerves. As the twelfth nerve comes from the hypoglossal canal, it is just posterior to the eleventh nerve. On the prevertebral fascia in this region lies the superior cervical ganglion. One can see, therefore, that in a limited area at the base of the skull even a small tumor may cause simultaneous lesions of the ninth, tenth, eleventh, and twelfth cranial nerves, as well as involvement of the superior cervical ganglion with resultant Horner's syndrome. Further, lateral extension in this area through the parotid gland will involve the seventh cranial nerve.

5. The last, and most fatal way of expansion is in an upward direction, which usually occurs through the foramen lacerum to the middle cranial fossa. Here the third, fourth, and sixth cranial nerves lie in intimate relation as they enter and cross the cavernous sinus. Also, the branches of the gasserian ganglion which lies in a dural recess on the superior side of the pyramid close to the tip are commonly involved. With extension anteriorly from the foramen lacerum, the optic tracts are injured and the orbit may be invaded. If the posterior cranial fossa is invaded, the seventh and eighth cranial nerves may be injured at the internal auditory meatus with resultant facial paralysis and perceptive deafness. The dura mater is resistant to attempts at penetration, probably to some extent because of its firm attachment to the base of the skull, especially at the point of emergence of the nerves.

Dr. H. E. Maddox, III, is an instructor at the University of Texas Medical Branch and is also in private practice in Houston. He presented this paper before the Texas Medical Association's Section on Eye, Ear, Nose, and Throat at the Fort Worth annual session on April 11, 1960.

Lymphatic Vessels of Nasopharynx

In the anatomic orientation to carcinoma in this region, the lymph vessels and lymph nodes are of great clinical importance. The nasopharyngeal wall is richly supplied with lymph capillaries, especially around the pharyngeal tonsil and the eustachian tube

orifice. From the capillary network are formed large lymph stems which show no respect for the midline of the body as do arteries and veins, but cross it freely. These stems carry the lymph into one of two groups of nodes: the retropharyngeal lymph nodes or the deep cervical lymph nodes.

The retropharyngeal lymph nodes in adult life comprise a constant lateral node (or two nodes) and a less constant medial node, located on the loose, retropharyngeal connective tissue anterior to the anterior arch of the atlas and close to the base of the skull. These nodes receive lymph from the roof and posterior wall of the nasopharynx, the eustachian tube, the tympanic cavity, and the anterior part of the oropharynx. From these retropharyngeal nodes the lymph drains to the superior group of deep cervical nodes—partly the medial ones and partly the lateral ones beneath the sternocleidomastoid muscle on the mastoid process. However, a comparatively great quantity of lymph from the nasopharynx passes primarily to the cervical nodes. The medial group of superior deep cervical nodes is situated just medial to th eposterior belly of the digrastric muscle. Of greater importance are the superior lateral glands located beneath the sternocleidomastoid muscle just posterior to the angle of the mandible, because this group is to a great extent the primary station of lymph from the nasopharynx.

Age

The average age of patients in this series was 50 years. There were, however, 8 patients younger than 20 years. The 3 youngest in the group were 10, 12, and 13 years. Hayes Martin states that carcinoma of the nasopharynx occurs more often in patients younger than 30 years, and is more common in children than any other malignant growth of the upper alimentary and respiratory tracts.

Otologic Symptoms and Signs

Nineteen patients had complaints referable to the ear when they were first examined, and 21 had positive otologic findings (Table 1). The most common aural complaint was that of pain in or around the ear described as intermittent in duration and stabbing in character. This was most often accompanied by fluid in the same ear. Fifteen patients gave a history of pain of this type. Seven patients complained of tinnitus generally of a hissing type, and 14 had had a recent decrease of hearing in one ear. Especially significant is the combination of fluid in the ear associated with neuralgic type of pain; pain is conspicuously absent in the usual patient with serous otitis media.

TABLE 1.—*Otologic Findings Present in More Than Half of the Author's Patients.*

Finding	No. of Patients
Otalgia	15
Otalgia with serous otitis media	7
Otalgia without serous otitis media	8
Deafness (blocked ear)	14
Tinnitus	7
Unilateral serous otitis media	14
Bilateral serous otitis media	7

(Hemotympanum 3 cases)

On examination of the tympanum, 21 patients had serous otitis media. In 7 of these disease was bilateral, and in 3 there was hemotympanum.

Fluid may form in one or both middle ear spaces as a result of several pathologic conditions in the nasopharynx (Table 2):

1. Spread of the tumor with encroachment on the eustachian tube orifice will compromise aeration of the middle ear.

2. Also, as stated by Robison, eustachian tube obstruction may result from an enlarged peri-tubal node or from lymphedema of the tubal mucosa secondary to blocking of the lymph drainage with cancer cells. The point of this obstruction to the normal nasopharyngeal lymph flow may be in the retropharyngeal nodes, or in their absence, in the superior deep cervical nodes.

3. Another cause of serous otitis media is direct extension of the primary tumor into the middle ear via the tube. Godtfredsen reported 3 cases in which positive biopsy specimens were obtained from the external auditory canal after a tumor originating in the nasopharynx had perforated the eardrum.

The causative factor for the 3 cases of hemotympanum in the present series is not readily apparent. In all patients the decreased hearing was secondary to the fluid in the ears and was of the conductive type.

Otalgia associated with nasopharyngeal malignant growths is intermittent and often stabbing in character, in distinct contrast with the dull, boring pain found in otitis media. Neuralgic ear pain occurring with neoplasms of this sort is often thought to be pathognomonic of invasion of the base of the skull with involvement of the mandibular division of the fifth cranial nerve. This is often true, but otalgia may be an early and far less serious sign. The superior portion of the nasopharynx receives its sensory

TABLE 2.—*Causes of Serous Otitis Media in Carcinoma of the Nasopharynx.*

1. Encroachment of tumor mass on eustachian orifice.
2. Lymphatic edema of tubal mucosa secondary to obstructed flow.
3. Extension of tumor into middle ear via tube.

TABLE 3.—*Otalgia in Carcinoma of the Nasopharynx.*

1. Neuralgic pain.
2. May be evidence of invasion of base of skull (Mandibular nerve).
3. May be early diagnostic sign (Pharyngeal plexus).

innervation from the pharyngeal branches of the sphenopalatine ganglion, which in turn are derived from the trigeminal nerve. Therefore, otalgia may be an early diagnostic sign of a lesion high in the vault of the nasopharynx instead of a secondary manifestation of skull invasion (Table 3).

Other Manifestations

Involvement of most of the cranial nerves, as well as nasal symptoms and signs of regional metastases, were found in this series of 35 patients (Table 4). Some of these signs were seen late in the course of the disease. Fifteen patients had involvement of the trigeminal nerve; this far exceeded the incidence of involvement of any other cranial nerve. A lateral rectus palsy was seen in 5 cases, and the third and fourth nerves were each involved in 2 patients. One patient had facial paralysis and another anesthesia of the posterior part of the tongue, which was attributed to disease of the ninth nerve. In 4 patients vagal involvement was manifested by palatal paresis, dysphagia, and vocal cord paralysis.

The most common finding, with the exception of manifestations referable to the ear, was cervical node enlargement, which was present in 20 cases. Typically, the superior deep cervical node located just behind the angle of the mandible and beneath the insertion of the sternomastoid muscle was involved. In 1 case nodes in the posterior cervical triangle were positive at excisional biopsy. Trismus was the complaint of 3 patients. This is invariably secondary to direct invasion of the muscles of mastication, and seldom to involvement of the motor branch of the trigeminal nerve.

Nasal symptoms predominated in 16 patients. Eight had repeated nose bleeds, and an equal number complained of nasal obstruction. In 1 patient typical Horner's syndrome was attributed to disease of the superior cervical sympathetic ganglion.

Diagnosis

The diagnosis of a malignant tumor of the nasopharynx is seldom made early in the course of disease. First, there is a relative lack of symptoms referable to the primary area. A second, and perhaps equally important reason, for delay is inability of the physician to make a diagnosis. In a large series Godtfredsen discovered that diagnostic and therapeutic mistakes had been made in one-third of cases. Especially regrettable are the cases in which unnecessary surgical procedures have been done to alleviate symptoms arising from an undiscovered tumor. Probably the most common error is repeated eustachian catheterization for serous otitis media of unknown cause over a prolonged period.

TABLE 4.—*Associated Findings in Carcinoma of the Nasopharynx.*

Finding	No. of Patients
Cranial nerve involvement	
Oculomotor	2
Trochlear	2
Trigeminal	15
Abducens	5
Facial	1
Auditory	0
Glossopharyngeal	1
Vagus	4
Hypoglossal	2
Other manifestations	
Cervical lymphadenopathy	
Unilateral	20
Bilateral	3
Posterior triangle	1
Epistaxis	8
Nasal obstruction	8
Trismus	3
Horner's syndrome	1
Periorbital edema	1
Parotid invasion	1

TABLE 5.—*Roentgenographic Findings at Base of Skull.*

1. Erosion 5 times more common with evidence of neurologic involvement.
2. Foramen lacerum involved in more than half of patients.
3. Pterygoid process diseased in one-third.
4. Mesial destruction of body of sphenoid in one-tenth.

It is not necessary to enumerate the many different methods of examination of the nasopharynx. The examiner should be completely satisfied that every area of the nasopharynx has been carefully inspected in each individual. In most patients this is often not possible without local anesthesia. An effective method of examination of the pharyngeal vault is use of the large laryngeal mirror after the soft palate has been retracted with either a self retaining palate retractor of the Haslinger type or a soft rubber catheter. Digital examination should be done only under general anesthesia, and its value is doubtful in most instances.

Roentgenograms of the skull base should be obtained in every patient with suspected nasopharyngeal lesion. This is not only an invaluable aid in diagnosis but gives important additional information concerning prognosis. In the present series of 35 patients, 23 had basilar skull films. Erosion of bone was apparent in 19 of these. Positive findings of this

sort are 5 times more common in patients with cranial nerve symptoms (Table 5). The foramen lacerum is affected most commonly (50 to 60 per cent). The medial lamina of the pterygoid process and the body of the sphenoid showed signs of destruction in a smaller number of cases.

Biopsy of the nasopharynx can be a traumatic experience for both the patient and the physician, especially if the procedure must be repeated more than once. A single negative biopsy on a patient exhibiting suggestive symptoms is never considered adequate, however. Most patients in this series had biopsies with use of local anesthesia. In approximately one-half, more than one procedure was needed to obtain a positive tissue diagnosis. In 5 patients who had symptoms suspicious of early nasopharyngeal carcinoma, thorough examination of the region failed to show even a slight abnormality. Curettement with use of general anesthesia yielded positive diagnoses in all 5 of these cases. It is extremely important in adult patients with persistent serous otitis media for which no cause can be found, that aggressive diagnostic procedures be directed toward the nasopharynx. This holds true also for patients with obscure facial pains, especially when ocular palsy or serous otitis media are found on physical examination.

Case Presentations

A brief review of several recent cases in the present series illustrates the necessity for aggressive and persistent diagnostic measures.

CASE 1.—A 13 year old boy was seen in December, 1957, by his local doctor, complaining of trismus on the right, pain and swelling anterior to the right ear, and right frontal headache. He was treated symptomatically for 3 months without relief. When he was seen at John Sealy Hospital, main complaints were severe pain in the right ear and severe trismus on the right. At examination serous otitis media of the right ear and an enlarged lymph node at the angle of the right mandible were found. Roentgenograms failed to show any basilar skull erosion, and no nasopharyngeal lesion was seen on mirror examination.

The lymph node was removed and nasopharynx curetted with use of general anesthesia, but specimens showed only chronic inflammation. On the strength of these reports, the child was dismissed from the hospital. The trismus was better.

Four months later the boy was re-admitted with the same ear filled with fluid but in addition, pain in the right side of the face, and bilateral cervical adenopathy. The biopsy specimens were indicative of lymphoepithelioma.

Repeated biopsies at the time of initial admission probably would have resulted in diagnosis without the loss of four valuable months. A single negative lymph node and more especially a single negative nasopharyngeal biopsy should never be termed conclusive in exclusion of a malignant tumor of the nasopharynx.

CASE 2.—A 46 year old female was seen by an otolaryngologist because of a "stopped up" right ear, a symptom which had been present for 9 months. Diagnosis of serous otitis media was made and treatment consisting of repeated insufflation and myringotomy was instituted, but the fluid persisted. Four months later the woman complained of severe radiating pains in the right side of the face, over the area of distribution of the sensory branches of the trigeminal nerve.

Another 7 months passed, and a positive biopsy specimen was obtained from the fossa of Rosenmuller on the right side. By this time the patient had numbness of the right side of the tongue. Exactly one year had elapsed at the time of the biopsy since the patient's first visit for a "stopped up ear!"

Any patient with fluid in the middle ear which persists despite treatment and for which no obvious cause can be found should be suspected of having a nasopharyngeal lesion until diagnosis is definitely proved otherwise.

CASE 3.—A 12 year old boy underwent modified radical mastoidectomy because of left hemotympanum associated with severe pain in the periauricular region. Two months after operation an enlarged lymph node was apparent in the left posterior cervical triangle, and the child complained of moderately severe trismus. Two months later the boy had a bout of epistaxis and left palatal paresis. Biopsy of the mass in the neck and tissue from the nasopharynx showed a lymphoepithelioma.

In this case, fluid in the ear and the pain should have directed the examiner's attention to the nasopharynx.

Conclusion

The physician's responsibility is both grave and far-reaching in daily clinical work, in which mistaken diagnoses are hardly to be avoided, not even by the most careful examiners. The examples of diagnostic omission are meant exclusively as a matter-of-fact statement of actual conditions, and are aimed only at increasing the examiner's awareness of the need to be always "cancer minded." Deafness and otalgia are 2 of the most common symptoms of patients treated by the otolaryngologist. Their importance as early diagnostic clues in malignant tumors of the nasopharynx must be constantly remembered.

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Dr. Maddox, 1600 Memorial Professional Bldg., Houston 2.

ABSTRACT OF DISCUSSION

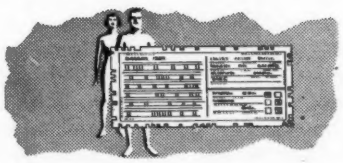
DR. JOHN BARRETT, Houston: It is not our problem to decide whether lymphoepithelioma, undifferentiated cell carcinoma, transitional cell carcinoma, Schmincke tumor, and similar terms pathologists use to designate malignant tumors of the nasopharynx are the same, or are entirely different neoplasms. Regardless of nomenclature, all of these lesions have one characteristic in common: they are radiosensitive, but not usually radiocurable. Of all of the malignant growths seen by otolaryngologists, these probably have the poorest prognosis. Early diagnosis should offer the best chance of cure, and this is solely the examiner's responsibility.

Of 20 of my private patients with this condition, 12 had the diagnosis made before I was consulted. In 9, cervical glands contained malignant tissue, and in 3 a biopsy specimen obtained from the nasopharynx was positive. Seven gave a history of ear symptoms which had been overlooked or disregarded. Of the 8 in whom I made the first diagnosis, 6 had symptoms referable to the ear, whereas only 3 reported because of cervical adenopathy. Since more than half of my patients had metastasis before the site of the primary lesion was determined, it indicates that the diagnosis of a nasopharyngeal lesion is being missed in many cases. Certainly patients with persistent secretory otitis media should be re-evaluated to be sure a nasopharyngeal tumor is not responsible for the symptoms and findings. In the past most hospitals did not send tissue from adenoidectomies and tonsillectomies for pathologic examination, but now this practice is mandatory in most hospitals. I believe that careful examination of all adenoid tissue removed is essential in cases in which fluid is present in the middle ear, especially if the condition is unilateral and recurrent.

The results of treatment in my patients are incomplete, as many returned to their family physicians after irradiation therapy and follow-up reports have not been received. In the ones whose progress I have been able to follow, therapeutic results have been poor. Only 4 are known to have survived for 5 years. Two were symptom-free when they were last seen, and 1 man died of a coronary attack after having shown no evidence of recurrence for 11 years. The final patient was a man who had had diagnosis and treatment in New York City 5 years before. He was sent to me because of recurrent middle ear infection. The tympanic membrane had perforated and there was a middle ear infection. There was no evidence of recurrence in the nasopharynx and the roentgenogram of the mastoid showed some evidence of disease. Surgery was deferred because of excellent results obtained by antibiotic therapy. The patient returned to his home in Mississippi.

When he was seen about 2 years later, there was still no evidence of recurrence in the nasopharynx, but infection of the middle ear was extensive and roentgen study showed further mastoid involvement. Radical mastoidectomy was performed. During operation a frozen section examination of tissue from the mastoid and middle ear was reported as chronic inflammatory tissue. Further study by fixed section showed malignant tissue similar to the original lesion in the nasopharynx. This patient died about 4 months later.

Another of my patients had trismus as an original symptom. After irradiation almost complete ankylosis of the temporomandibular joint developed. Perhaps this was the result of extension of the tumor into the pterygoid muscles with subsequent postirradiation fibrosis.



MEDICOLEGAL NOTES

Legal Obligation to Report Narcotic Addicts Clarified

Since the passage of Article 725c of the Texas Penal Code which declared it unlawful for any person to habitually use or be addicted to the use of narcotic drugs, Texas physicians often have become concerned about legal obligations to report a narcotic addicted patient to the appropriate law enforcement agency.

We believe as concurred by the Narcotics Division of the Texas Department of Public Safety, that there is no statutory or legal obligation placed upon a physician to report known or suspected narcotic addicts, which he may at times encounter in his practice. This is also the position taken by the Bureau of Narcotics of the United States Treasury Department.

A physician has no legal obligation under the provisions of Article 725c to report narcotic addicts. Thus it might be wondered what purpose is to be served by this statute. The main reasons become apparent in a study of other provisions contained in the statute.

This article of our penal code provides that, in addition to it being unlawful for a person to habitually use or be addicted to the use of narcotic drugs, such addiction constitutes a felony offense. The purpose for the statutory provision which makes it a felony to be a narcotic addict was to provide the mechanics whereby a narcotic addict could be forced to submit to enter a hospital for treatment of his addiction as a condition of probation in lieu of imprisonment. If the addict submits to hospitalization and remains until discharged by the institution's medical authorities as cured, he may thus avoid imprisonment.

I am sure that physicians have been approached occasionally by addicts or members of their families on how and where one can submit voluntarily for treatment.

Article 3196c-1 provides that a resident of this state addicted to narcotics shall be eligible for admission and treatment in a state hospital under the jurisdiction of the Board of Texas State Hospitals and Special Schools. Before this Board will consider admitting a person voluntarily submitting himself for care and treatment, a licensed physician must certify in a written statement that, to the best of his knowledge, the applicant is a narcotic addict and needs hospitalization and treatment.

Although the preceding statutory provision exists, it appears from available information that few narcotic addicts have benefitted from this statutory provision and voluntarily submitted themselves for care and treatment in a state hospital.

Also available to narcotic drug addicts are the facilities of the Public Health Service hospitals in Fort Worth and Lexington, Ky. Both of these hospitals will accept individuals who have voluntarily applied for treatment as narcotic drug addicts. The United States Public Health Service Hospital in Fort Worth is limited solely to male patients; the Lexington institution has facilities for male and female patients. Both hospitals require that an application be submitted, and application forms can be obtained by writing to the desired hospital. The hospital will forward appropriate application forms and other information. The individual who desires to submit himself for treatment must pay travel expense to the particular hospital. In some instances, immediate admission is not possible, but usually delay is short.

—PHILIP R. OVERTON, LL.B., Austin.

More Oldsters Have Health Insurance Now

Forty-nine per cent of all Americans 65 years of age or older had health insurance protection against the costs of ill health at the beginning of 1960, the Health Insurance Association of America has reported. In addition, another 15 per cent, officially classified as indigent, have medical needs provided for through the Old Age Assistance program.

The introduction of new insuring techniques has marked greatly increased activity in the 65-and-over field by insuring organizations since 1952, said the Association. One technique has been the mass enrollment approach of issuing health insurance to large groups of aged persons in a state.

New Antibiotics

Colistin, obtained from Bacillus colistinus in Japan, is reported to be effective against most gram-negative bacteria, but is less effective against gram-positive bacteria and fungi. Chemically, this new antibiotic is a basic polypeptide resembling the polymyxins. However, it differs from any other known polypeptide antibiotic in its biologic properties.

Aspartocin (Lederle), another new polypeptide antibiotic, in some respects resembles amphomycin, but it is more active. According to Lederle chemists, studies indicate that aspartocin consists of amino acids and a fatty acid fraction. This antibiotic is bactericidal. Staphylococci develop resistance to aspartocin at a slow rate and to a relatively low level. Streptococci, appearing more sensitive to the drug, develop a lesser degree of resistance. Furthermore, this new antibiotic is effective (in vitro) against bacteria made resistant to the tetracyclines, leucomycin, erythromycin, spiramycin, magnamycin, and puromycin.

Fervenulin (Upjohn) has been isolated from a species of soil actinomycete, streptomyces fervens. This antibiotic has demonstrated antibacterial, antifungal, antiparasitic, and antitumor cell activity in vitro.

Streptozotocin (Upjohn) is a new antibiotic produced by streptomyces achromogenes var. 128. This product is active against a variety of both gram-positive and gram-negative organisms. Chemical studies indicate that this water-soluble antibiotic possesses an N-nitroso group within the molecule.

Rifomycin (Lepetit-Italy) isolated from streptomyces meditarranei has created much interest because of its activity against gram-positive bacteria and mycobacteria. Furthermore, its low order of toxicity has encouraged clinical investigations on 27 patients. Types of infection included otitis media purulenta, dental abscess, furunculosis, proctitis, ulcerative colitis, mastitis or mammary abscess, fever of unknown origin, and pulmonary abscess. Most patients responded favorably. In cases of pulmonary abscess, therapeutic effect was transitory; the case of tonsillitis follicularis must be considered as "drug failure." No side reactions or toxic manifestations were reported.

Symposium on Infertility Scheduled for Houston

The first symposium on diagnosis and treatment of infertility to be held in Texas is scheduled January 19-21, 1961, by the University of Texas Postgraduate School of Medicine, Houston.

Lecturers include Dr. S. J. Behrman, associate professor of obstetrics and gynecology, University of Michigan Medical School, Ann Arbor, Mich., who opened new vistas on the "normal" infertile couple; Dr. H. R. Cohen, active staff of Touro Infirmary, New Orleans, evaluator of the psychosomatic factor; Dr. Albert Decker, clinical professor of obstetrics and gynecology, New York School of Medicine and Polyclinic Medical School, New York City, inventor of the culdoscope; Dr. P. L. Getzoff, urologist, New Orleans, authority in male infertility; Dr. G. Seegar Jones, associate professor of gynecology, Johns Hopkins University School of Medicine, Baltimore, editor in chief of *Obstetrical and Gynecological Survey;* Dr. R. W. Kistner, associate professor of gynecology and obstetrics, Harvard Medical School, Boston, leader in combating endometriosis in sterility.

Also, Dr. A. F. Lash, professor of obstetrics and gynecology, University of Illinois Medical College and professor of gynecology, Cook County Postgraduate School, Chicago, discoverer of the incompetent cervix; Dr. Maurice Meynier, clinical associate professor of gynecology, The University of Texas Postgraduate School of Medicine, Houston, who established a new way to eliminate chronic cervicitis as a cause of infertility; Dr. R. W. Noyes, associate professor of obstetrics and gynecology, Stanford University School of Medicine, San Francisco, who first dated the endometrial biopsy; Dr. Maxwell Roland, associate obstetrician and gynecologist, Albert Einstein College of Medicine, New York, and treasurer of the International Fertility Association, Forest Hills, New York; Dr. Irving Stein, associate professor of obstetrics and gynecology, Northwestern University Medical School, Chicago, (Stein-Leventhal syndrome); Dr. Erwin O. Strassmann, lecturer in obstetrics and gynecology, The University of Texas Postgraduate School of Medicine, professor of clinical obstetrics and gynecology, Baylor University College of Medicine, Houston, professor extraordinary emeritus, obstetrics and gynecology, University of Berlin; Dr. B. B. Weinstein, co-founder of the International Fertility Association, associate professor of gynecology, Tulane University of Louisiana School of Medicine, New Orleans; and W. W. Williams, editor-in-chief, *International Journal of Fertility,* co-founder of the International Fertility Association, Springfield, Mass.

Rocky Mountain Traumatic Group Meets January 26-28

The Rocky Mountain Traumatic Surgical Society will meet January 26-28, 1961, in Aspen, Colo.

Guest speakers include Dr. John A. Schilling, Department of Surgery at the University of Oklahoma Medical Center, whose subject will be "Deceleration Injury and Tissue Tolerance"; Dr. Robert M. Bird, University of Oklahoma Medical Center, "Complications of Massive Transfusion Therapy"; and Dr. William Covode and Dr. Dale Atkins, both Denver urologists, "Urologic Concussion and Trauma."

A panel, "Modern Problems and Concepts of Emergency Room Care" will be featured.

Lodging reservations for the meeting should be made early and may be addressed to the Aspen Travel Service, Aspen, Colo.

Bahamas Conferences 1960 Slate Announced

The Seventh Annual Series of Bahamas Conferences have been announced by Irvin M. Wechsler, executive director.

Schedule of Conferences:

Tenth Medical Conference, November 30-December 10, 1960; Third Surgical Conference, December 28-January 7, 1961; Conference on Hypertension, January 8-14, 1961; Third Serendipidity Conference, January 22-28, 1961; Second Allergy Conference, February 9-15, 1961; Eleventh Medical Conference, April 3-15, 1961; Conference on Internal Medicine, April 30-May 6, 1961.

Further information may be obtained by writing the executive director at Bahamas Conferences, P. O. Box 1454, Nassau in the Bahamas. Ten cents postage is required to Nassau.

American College of Surgeons Plans Meeting in Mexico City

The American College of Surgeons will meet in Mexico City for the first time January 23-26, with headquarters at the Del Prado, Vista Hermosa, El Presidente, Alffer, and Continental Hilton Hotels.

The program will include clinics, panel discussions, medical motion pictures, symposia, and a sightseeing trip of Mexico City. Further information on the meeting may be obtained by writing Dr. William E. Adams, secretary of the American College of Surgeons, 40 East Erie Street, Chicago 11.

San Antonio Medical Group Schedules Annual Assembly

The twenty-fifth annual session of the International Medical Assembly of Southwest Texas will convene in San Antonio, January 23-25, 1961, at the Granada Hotel.

Seventeen speakers are on the program, including Dr. Cecil M. Kohn, Kansas City, Mo., representing allergy; Dr. William Dameshek, Boston, internal medicine; Dr. Gilbert S. Gordan, San Francisco, internal medicine; Dr. Phillip S. Hench, Rochester, Minn., internal medicine; Dr. Louis A. Soloff, Philadelphia, internal medicine; Dr. John C. Burch, Nashville, obstetrics-gynecology; Dr. Dohrmann Pischel, San Francisco, ophthalmology.

In addition, Dr. Ben H. Senturia, St. Louis, otolaryngology; Dr. Israel Davidsohn, Chicago, pathology; Dr. Wallace W. McCrory, Iowa City, Iowa, pediatrics; Dr. Lawrence C. Kolb, New York, psychiatry; Dr. Guillermo Santin, Mexico City, radiology; Dr. Julian Johnson, Philadelphia, surgery; Dr. C. W. Mayo, Rochester, Minn., surgery; Dr. Henry D. Morris, New Orleans, surgery; Dr. William F. Reinhoff, Baltimore, surgery; Dr. Donald R. Smith, San Francisco, urology.

Further information may be obtained from Dr. Max E. Johnson, president, or S. E. Cockrell, Jr., executive secretary, 202 West French Place, San Antonio 12.

Rheumatism Association Sets Dallas Session

The American Rheumatism Association will hold its Seventh Interim Session December 9-10 in Dallas, with headquarters in the Hotel Sheraton-Dallas. One meeting will be held in conjunction with the Texas Academy of Internal Medicine and the Texas Rheumatism Association.

A feature of the meeting will be a post-convention trip to Mexico City, which will include a tour of the Institution De Cardiologia in Mexico City.

More than 50 scientific papers will be presented either in full or by title at the meeting, including the session Saturday, December 10, in conjunction with the two previously named medical organizations. A portion of this session will include a panel discussion on "Lupus Nephritis."

New Orleans Meeting Includes Orient Tour

The twenty-fourth annual meeting of the New Orleans Graduate Medical Assembly will be held March 6-9, with headquarters at the Roosevelt Hotel in New Orleans.

Nineteen guest speakers are scheduled for the program.

Arrangements have been made for a clinical tour to the Orient following the meeting. The group will leave New Orleans by air on March 10 to make a connection with a jet flight leaving Los Angeles. The itinerary includes visits to Hawaii, the Philippines, Hong Kong, and Japan, and return on March 30 to the gateway city of choice—Los Angeles, San Francisco, or Seattle.

Details of the meeting and the tour are available at the office of the Assembly, Room 103, 1430 Tulane Avenue, New Orleans 12.

Mexico To Be Site Of Clinical Program

An international clinical postgraduate program for physicians and surgeons will be offered by the University of California Extension in January.

The second annual program is sponsored jointly by the School of Medicine of the University of California at Los Angeles; the Universidad Nacional Autonoma de Mexico; the University of Guadalajara School of Medicine; and the Escuela Nacional de Medicina, Mexico, D.F.

The program will convene in Mexico City, continue at Acapulco, and conclude in Guadalajara.

Additional information may be obtained from Thomas H. Sternberg, M.D., Assistant Dean for Postgraduate Medical Education, University of California Medical Center, Los Angeles 24.

Symposium on Nutrition

Scheduled November 30 in Washington, D. C., is a symposium on clinical nutrition, sponsored by the Council on Foods and Nutrition of the American Medical Association in cooperation with the Medical Society of the District of Columbia.

Two panels will be featured on the program, "The Diagnosis of Nutrient Deficiencies" and "The Management of Dietary Inadequacies."

Biannual Alumni Meet Held by Scott-White

Officers elected at the biannual meeting October 14 of the Scott and White Alumni at Temple were Dr. Mavis Kelsey of Houston, president; Dr. Albert M. McCulloh of Brady, vice president; Dr. A. C. Broders, Jr., of Temple, secretary-treasurer.

Medical papers were presented by Dr. J. D. Bonnet, Dr. C. W. Barrier, Jr., and Dr. H. L. Wood, all of the Scott and White staff at Temple.

Other features of the meeting included a golf tournament for visiting physicians, cruises of the Belton reservoir, tours of the Scott and White research laboratory, and briefings on plans for the new Scott and White hospital and clinic.

EDUCATION

Postgraduate Courses

General Practice Review, Denver, January 8-14, 1961.—The seventh annual postgraduate course for general practitioners is scheduled for one full week, and the applicant may register for the entire course or for any selected days. Subjects will include (1) Sunday, "The Internal Medical Audit"; (2) Monday, "Medicine"; (3) Tuesday, "Pediatrics"; (4) Wednesday, "Surgery"; and (5) Thursday, "Eye, Ear, Nose, and Throat"; (6) Friday, "Obstetrics and Gynecology"; and Saturday, "Dermatology." Further information and a detailed program may be obtained by writing the Office of Postgraduate Medical Education at the University of Colorado School of Medicine, 4200 East Ninth Avenue, Denver 20.

Allergy, Houston, January 30-February 3.—The University of Texas Postgraduate School of Medicine is presenting a course on allergy to be conducted by Dr. Herbert J. Rinkel January 30-February 3, 1961. The course will be followed by a meeting of the Gulf Coast Allergy Group on February 4-5. Further information may be obtained by writing the Office of the Dean, The University of Texas Postgraduate School of Medicine, 410 Jesse Jones Library Building, Houston 25.

Rhode Island Editor Dies

Dr. John E. Donley, editor-in-chief of the *Rhode Island Medical Journal* and a past president of the Rhode Island Medical Society, died September 17.

Dr. Seebert J. Goldowsky has been named the new editor-in-chief of the Rhode Island publication.

University of Texas Medical Branch

Dr. T. A. Loomis, associate professor of pharmacology at the University of Washington, Seattle, spoke on "Metabolism of Heparin" on October 3.

Dr. Jack L. Strominger, professor of pharmacology at the University of Washington School of Medicine, Seattle, presented the McLaughlin Lectures on October 6. His titles were "Nucleotide Intermediates in the Biosynthesis of Polysaccharides" and "Antibiotics as Inhibitors of Bacterial Cell Wall Synthesis."

Dr. Sten Mullertz, director of Centrallaboratoriet, Blegdamshospitalet, Copenhagen, Denmark, discussed "The Mechanism of Activation of Plasminogen" at the anatomy seminar on October 10.

Dr. Robert J. Huebner, chief of the Laboratory of Infectious Diseases at the National Institutes of Health, Bethesda, Md., presented the subject "Recent Developments in Public Health Virology" on October 14.

On October 17 Dr. Llewellyn L. Ashburn of the National Institutes of Health, Bethesda, Md., the first Sigma Xi speaker of the academic year, presented the subject "Germ-free animals in Research."

Foreign Fellowships Available

Selected medical students who have finished either their third or fourth year of training are eligible to apply for a fellowship program which will give them the opportunity to study medicine in remote areas of the world. It is being sponsored by the Association of American Medical Colleges.

Begun last year as the Smith Kline & French Foreign Fellowships, the program is designed to acquaint American students with health problems not generally seen in this country and to introduce them to physicians working where facilities are limited. Application blanks are available from medical school deans, and must be returned to the American Association of Medical Colleges by December 31. Fellows will be announced in early March. Cash awards are made from a $180,000 fund provided by Smith Kline & French Laboratories, Philadelphia.

Medical Authorities Prepare History of World War II

A series of 48 volumes entitled, "History of the Medical Department, U. S. Army, in World War II" is being prepared under the direction of the surgeon general of the United States Army.

The 15 clinical volumes which have been published are available from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

Baylor Receives $262,500 Grant From National Heart Research

Baylor University College of Medicine at Houston has been designated as a major cardiovascular research center by the National Heart Institute of the United States Public Health Service, a project made possible by a research grant of $262,500 for the first year. This will be used to develop basic and clinical research studies in the field.

Utilizing resources of various departments and affiliated hospitals of the college, the Baylor Cardiovascular Research Center will devote particular attention to the study of atherosclerosis, its nature, treatment, and prevention. A substantial portion of the initial grant will be used to establish and maintain a six bed research ward for patients with cardiovascular disease. The clinical study unit will be located at Methodist Hospital in a small new wing to be built adjacent to the research laboratories on the ninth floor of the hospital.

Principal investigators and supervisors of the research are Dr. Raymond D. Pruitt, professor and chairman of the Department of Medicine, and Dr. Michael E. DeBakey, professor and chairman of the Cora and Webb Mading Department of Surgery at the college.

OF GENERAL INTEREST

Personals

Dr. John J. Andujar, Fort Worth, was installed recently as president of the American Society of Clinical Pathologists at the group's annual meeting in Chicago.

Dr. R. R. White, Temple, has been elected to the Advisory Board of the Mayo Foundation, Rochester, Minn. Dr. White served a fellowship in surgery at the clinic from 1940 to 1943.

Dr. J. G. Rodarte, Temple, was elected a trustee of the American Association of Medical Clinics at a recent meeting in New Orleans. He is one of the six trustees of the nationwide association.

Dr. Randolph Lee Clark, Jr., director of M. D. Anderson Hospital and Tumor Institute and professor of surgery at The University of Texas Postgraduate School of Medicine, Houston, will preside at the thirty-sixth annual meeting of the Alumni Association of the Mayo Foundation in Rochester, Minn. The meeting is scheduled September 29-October 1. Dr. Clark is president of the group.

Dr. Jack M. Partain, San Antonio, was installed as president of the Texas Academy of General Practice at a dinner in Dallas on October 4.

Dr. George E. Clark, Jr., Austin, was installed as president of the Texas Heart Association in September.

Dr. J. M. Robison of Houston, professor of otolaryngology at The University of Texas Medical Branch, Galveston, was honored by his ex-residents at the first Ear, Nose, and Throat banquet held October 12 at the Palmer House in Chicago. He was presented a plaque in recognition of his years of service to his medical school. The banquet was a feature of an alumni meeting of The University of Texas Medical Branch, The University of Texas Southwestern Medical School, and Baylor University College of Medicine.

Recently named president of the Texas City Chamber of Commerce was *Dr. Robert P. Green.*

Dr. T. H. Dabney of Granbury was honored on his one-hundredth birthday September 27. The day was declared "Dr. Dabney Day" by the mayor of the city. Dr. Dabney was a graduate of Louisville Medical College in 1886 and practiced in Granbury and Hood County from 1890 until he retired at the age of 94.

Dr. Donald Duncan, professor and chairman of the Department of Anatomy at The University of Texas Medical Branch, Galveston, has been appointed to the Anatomical Science Training Committee of the National Institute of Health, an agency of the United States Public Health Service.

Dr. George R. Herrmann, professor of medicine at The University of Texas Medical Branch, Galveston, recently attended a number of international medical congresses, including the Sixth Inter-American Cardiological Congress at Rio de Janeiro, where he presented a paper and was the recipient of the Homage Medal of the Societies of the Inter-American Cardiology and of the Brazilian Cardiology. He also attended meetings in Basel, Switzerland; Vienna; Istanbul, Athens, and Rome.

Dr. M. Jeanne Fairweather of Brooke General Hospital, Fort Sam Houston, recently was named outstanding woman of the year in the field of medical sciences by Incarnate Word College, San Antonio. The college and alumnae of the college presented Dr. Fairweather the award at an honors dinner.

Dr. Jesse Boyd Heath, Madisonville, is new University of Texas Dads' Association president. He succeeds Marion A. Olson, San Antonio attorney. He was elected president at the Thirteenth Annual Dads' Day on October 29.

Dr. Charles M. Cole, Dallas, is recipient of the Dallas Hospital Council Award given each year to "an individual who has made an outstanding contribution to the health of Dallas." The honor was presented October 26 at the annual awards dinner of the Council at the Sheraton-Dallas Hotel. Louie E. Throgmorton, vice president of Republic National Life Insurance Company was speaker.

American College of Surgeons Inducts 53 Texas Fellows

Fifty-three Texas surgeons were named as fellows of the American College of Surgeons at the close of the organization's clinical congress in San Francisco, October 10-14.

Named were Dr. Maurice N. Levy, Jr., Amarillo; Dr. George L. Campbell, Beaumont; Dr. Samuel J. Merrill, Brownsville; Dr. Jack T. Chisolm, Dr. W. Kemp Clark, Dr. Marvin C. Culbertson, Jr., Dr. John L. Denman, Dr. Stewart A. Fish, Dr. James E. Gleichert, Dr. Ben F. Mitchel, Jr., Dr. Wilford M. Sanders, Jr., Dr. Arthur W. Shannon, Jr., Dr. Marvin G. Shepard, Dr. Theodore P. Votteler, all of Dallas.

Dr. Victor M. Blanco, Dr. Donald H. Ewalt, Dr. Willard W. Schuessler, Dr. William H. Wade, all of El Paso; Col. Franklin L. Spann, Fort Sam Houston; Dr. Willis H. Carter, Dr. John Binford Patterson, Fort Worth; Dr. Van G. Kaden, Gainesville; Dr. John R. Derrick, Galveston; Dr. Ray Cruse, Hearne; Dr. Benjy F. Brooks, Dr. Pedro C. Caram, Dr. Thomas H. Guthrie, Dr. Paul R. Harrington, Dr. Joseph K. Johnson, Jr., Dr. Benjamin F. Kitchen, Jr., Dr. Richard G. Martin, Dr. Horace T. Robbins, Dr. Herbert M. Seybold, Dr. Thane T. Sponsel, Dr. John S. Stehlin, Jr., Dr. Harry R. Stoner, all of Houston.

Dr. Joe H. Roberts, Irving; Dr. Henry C. McGrede, Jr., Longview; Dr. Jack Dunn, Jr., Dr. Richard Q. Lewis, Lubbock; Dr. Howard L. Smith, Marlin; Dr. Robert E. Johnston, Midland; Dr. Donald N. Cain, Pasadena; Dr. Walter A. Brooks, Quanah; Lt. Col. Ferris E. Cook, Jr., and Dr. Robert C. Hardy, San Antonio; Dr. Charles W. Broders, Temple; Dr. Phillip W. Taylor, Tyler; Dr. James L. Coleman, Jr., Victoria; Dr. Charles T. Meadows, Wharton; Dr. Eldo M. Jones, Dr. Cameron Morrison, Maj. Homer E. Woosley, Jr., all of Wichita Falls.

Proctology Award Offered

The International Academy of Proctology has announced its annual cash prize and certificate of merit award contest for 1960-1961. The best unpublished contribution on proctology or allied subjects will be awarded $100 and a certificate of merit.

Presentation of the first prize and other certificates will be made at the annual convention dinner dance of the International Academy of Proctology, April 12, 1961, at the Drake Hotel, Chicago.

Entries are limited to 5,000 words, must be typewritten in English, and must be submitted in 5 copies. They must be received no later than February 1, 1961, addressed to Alfred J. Cantor, M.D., Executive Officer, International Academy of Proctology, 147-41 Sanford Avenue, Flushing 55, N. Y.

Medical Amendment to Have Little Effect Now

The Social Security amendment providing medical care for the aged, which was enacted by Congress at its special session earlier this year, will have little effect upon existing programs in Texas, at least for the present. Full implementation of the program will depend upon the appropriation of state funds by the Texas Legislature, and the amending of the Texas Constitution by the voters.

The immediate effect of the Mills-Kerr bill will be limited primarily to liberalizing the matching formula of state and federal funds for medical care for Texans receiving Old Age Assistance.

John H. Winters, commissioner of the State Department of Public Welfare, has pointed out that the new formula includes 75.79 per cent federal money to 24.21 per cent state money. Heretofore federal money has been available on a basis of 61.36 per cent federal funds matched to 38.64 per cent state money. The original formula would have included Old Age Assistance, aid to the blind, aid to the permanently and totally disabled, and aid to dependent children. The new bill will allow a maximum of $12 per person for those already receiving Old Age Assistance. In other categories of aid, the formula itself is not changed.

Before the program can go into effect in Texas, enabling legislation will have to be enacted by the Legislature and Texas' share of the money must be appropriated.

If enabling legislation is passed, payments can be made directly to hospitals, doctors, nursing homes, or to any vendor of medical goods or services as permitted by the Legislature. No individual would receive an increase in his assistance grant. If $12 per person per month is made available, this figure would be multiplied by the number of persons on the Old Age Assistance roll (currently 223,000). The resulting total will be the amount of money available for vendor or direct payment for medical care for Old Age Assistance recipients for that month.

The second part of the bill would establish direct or vendor payment medical care for persons 65 years of age or older who are not recipients of Old Age Assistance but whose income and resources are not sufficient to purchase medical care. The matching formula would be the same as for Old Age Assistance, except that there is no limitation on the total amount allotted per person. Before this could be effected, the Texas Constitution would have to be amended to permit the Legislature to establish the program and enabling legislation will have to be passed with an appropriation for the state's share of the money.

Chest Physicians Request Information on New Films

Physicians are invited to send information concerning their own films to the Committee on Motion Pictures of the American College of Chest Physicians, which is interested in learning about new films on diseases of the chest for possible presentation at the Twenty-Seventh Annual Meeting of the group in New York City, next June 22-26.

Films accepted for presentation in the annual motion picture program are eligible for the 1961 Film Contest. The committee also would like to review new motion pictures to include in the Approved Film List of the American College of Chest Physicians.

Information on films should be sent to Dr. Paul H. Holinger, chairman, Committee on Motion Pictures, American College of Chest Physicians, 112 East Chestnut Street, Chicago 11.

Among winners of the 1960 College Film Contest were Dr. Michael E. DeBakey and Dr. George C. Morris, Jr., Department of Surgery, Baylor University College of Medicine, Houston, with their film, "Fusiform Aneurysm of Aortic Arch, Resection and Replacement with Dacron Graft," and Lieut. Col. Robert B. Stonehill, M.C., U.S.A.F., Technical Advisor, Lackland Air Force Base, with his film, "Air Travel and the Cardiopulmonary Patient."

Information for International Travel

Copies of the booklet "Immunization Information for International Travel," revised May, 1960, are available at 25 cents a copy. They may be ordered from the Superintendent of Documents, U. S. Government Printing Office, Washington 25.

Changes in immunization requirements occurring before the next issue of the booklet will continue to be listed under the item "Quarantine Measures" in the weekly Morbidity and Mortality Report, published by the National Office of Vital Statistics. Further information may be obtained from R. W. McComas, Department of Health, Education, and Welfare, Washington 25.

More than 400 New Drugs Yearly

The rate of new product introductions by ethical pharmaceutical manufacturers in the United States is 50 per cent greater than the popularly quoted "400 new products a year," according to *pharmIndex,* product-reporting service, of Portland, Ore.

In the last 6 months of 1959, a grand total of 306 new ethical pharmaceutical specialties were introduced to the United States pharmaceutical and medical professions. That is an annual rate of introduction exceeding 600 products a year—50 per cent higher than previous industry estimates.

Arthritis Foundation Booklet

The Arthritis and Rheumatism Foundation recently issued a new booklet of basic facts for school children on arthritis and rheumatism. The booklet is a part of the Foundation's campaign to help overcome "public ignorance and apathy concerning the serious national health problem."

Entitled "A Lesson in Arthritis," the easy-to-read booklet traces the history of arthritis from its earliest appearance millions of years ago among aboriginal creatures down to the 11,000,000 victims of the disease in the United States today.

Single copies of the 16 page booklet are available for 10 cents a copy from the Arthritis and Rheumatism Foundation, 10 Columbus Circle, New, York 19, or its local chapters.

Cancer Booklets Available

Modern uses of medically approved treatments in saving a growing proportion of cancer patients are described in a new booklet, "Treating Cancer," just issued by the Public Health Service of the Department of Health, Education, and Welfare, Bethesda, Md.

In terms understandable to the layman, the publication explains how malignant diseases are treated by surgery or by radiation with roentgen rays, radium, or the newer radioisotopes from atomic sources. It also tells how drugs are used to treat cancer.

Single copies of the booklet, Public Health Service Publication No. 690, may be obtained from the Public Health Service, Washington 25, D. C. It may also be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., at 15 cents per copy.

Bible Refers to Pharmacist

The science of pharmacy is at least as ancient as the prescriptions found on a 3,300 year old papyrus, but the profession was not always scientific. According to researchers at Ketchum & Co. Inc., the pharmacist has at one time or another been a doctor and witchdoctor, candy-maker, and even parfumeur.

The Bible makes frequent reference to the "art of the apothecary." Atop Mt. Sinai, for example, the Bible records that the Lord directed Moses to make "an oil of holy ointment, an ointment compound after the art of the apothecary." Evidence from several different sections of the Bible indicate that even in Biblical days, apothecaries had formed an association.

Interchange of Blood

A common national blood bank clearing house has been established by the American Association of Blood Banks and the American Red Cross, announced Dr. E. R. Jennings, President of the Blood Banks Association recently.

Under the program, he said, a patient may have relatives and friends anywhere in the country donate blood to either organization and have it quickly credited to the patient.

List of Health Insurance Books

The 1960 edition of "A List of Worthwhile Health Insurance Books" is being distributed by the Health Insurance Institute.

The new publication lists a selection of books on health insurance currently available from commercial publishers or other sources, organizations with a relationship to health and the financing of medical care, and periodicals that cover health insurance.

Copies of the booklet are available upon request from the Health Insurance Institute, 488 Madison Avenue, New York 22.

★ Texas Medical Association

County Society Officials To Hear Six Speakers

Six speakers have been announced for the 1961 Conference of County Society Officials sponsored by Texas Medical Association January 27-29 in Austin.

They include W. P. Strube, Jr., president of Mid-American Life Insurance Company, Houston; Dr. F. J. L. Blasingame, executive vice president of the American Medical Association; Joe M. Kilgore, representative of the Fifteenth Congressional District of Texas, Washington, D. C.; Frank S. Groner, administrator of the Baptist Memorial Hospital, Memphis; Ed Gosett, general attorney for Texas of Southwestern Bell Telephone Company, Dallas; and Senator Crawford Martin, Hillsboro, state senator and chairman of the Governor's Committee on Aging.

For the first time this year at the conference, a special session dealing directly with problems of county society officials is scheduled. Subjects to be covered include (1) topics which draw good attendance at county society meetings, (2) sources of programs, (3) other techniques for increasing attendance at meetings, (4) standing committees which every county society should establish, and (5) county society activities which should be stressed during the coming year.

Other topics that will be emphasized include responsibilities and duties of secretaries, types of membership, processing of dues, and preparation of reports. Also planned is a session on ways to implement the new federal-state program for medical care to the indigent and needy. A legislative program will be held to consider current legislative proposals to be set before the Texas Legislature and Congress in 1961.

Association councils and committees will meet during the Conference.

Texas Employers Insurance Association will be host for a hospitality hour the evening of January 28.

TMA Announces Program For Health Care of Aged

The Texas Medical Association has set forth a 10-point plan of action designed to improve health care for the 675,000 Texans who are 65 years of age or older.

The statement was prepared by officers and committee members of the Association, headed by Dr. Russell L. Deter, El Paso, Vice-President. Dr. Deter is coordinating all Association activities in the field of aging during the current fiscal year, at the request of the House of Delegates.

The 10-point plan of action includes statements on Association policies and programs, and offers answers and solutions to present aged health care needs and problems.

The 10 point program is as follows:

• *Responsibility for Care.* In keeping with American tradition, the individual has primary responsibility for his own medical care. When he is unable to provide such care for himself, the responsibility should pass to his family, then to the community, county, and state. Only when all of these fail should the federal government assume a role, and then only in cooperation with local and state governmental bodies.

• *Role of Physicians.* The physician has a responsibility to provide professional services to his patients, regardless of their ability to pay.

• *Voluntary Health Insurance.* Voluntary health insurance coverage should be extended to as many of the aged as is practicable. Special health insurance and prepayment policies tailored to meet the needs of the aged should continue to be developed and promoted. In addition, younger persons who are employed should be encouraged to purchase voluntary health insurance which will provide coverage beyond age 65.

• *Assistance Programs for Indigent and Needy.* Programs of health care are available to the indigent through Old Age Assistance plans. The TMA House of Delegates has favored the state vendor's medical care program, limited to only those who need help.

• *Personnel and Facilities.* The TMA House of Delegates advocated the erection of a fourth medical school in Texas, since authorized by the State Legislature. Similar attention must be given to educating professional and allied health personnel who assist the physician in care of the patient. Nursing resources particularly must be enhanced; more students should be recruited for the field. Nursing education and training should be expanded.

• *Home Nursing Care.* Care of the aged at home is psychologically, medically, and financially desirable. The Association encourages the development of programs to promote home nursing care.

• *Organizational Endeavors.* For many years, TMA has had an active Committee on Aging. The Committee has intensified its activities and educational endeavors in recent years to implement a multiphased program. Many other Association committees, such as Voluntary Health Insurance and Patient Care, continue to contribute to their fields of responsibility. In 1960, the House of Delegates charged the Vice-President to coordinate all activities in regard to health care for the aged. In addition, the Association, in cooperation with the Texas Dental Association, Texas Hospital Association, and Texas Nursing Home Association, formed the Texas Joint Health Council for the Aging. TMA has urged each of its component county medical societies to activate a Committee on Aging.

• *Educational Activities.* The Association encourages broad educational programs to prepare men and women to face the problems of aging more resourcefully. The Association also recognizes the need for increased health education activities, such as statewide informational program for the elderly on the importance of periodic health examinations and the role of preventive medicine in maintaining good health.

• *Attitude Toward the Aged.* A basic change in attitude toward the aged is imperative. The individual who attains age 65 does not suddenly become nonproductive and senescent. The Association lends its full support to assisting the elderly to attain increased productivity by eliminating compulsory retirement provisions and by permitting voluntary change of work.

• *Purchasing Power of the Dollar.* Economic problems of the aged have been intensified during the past 20 years by the constant erosion of the purchasing power of the dollar and by increasing taxes which claim a larger share of fixed incomes. Physicians, as

well as other professional men and women, business, industry, labor, and government can make a significant contribution to the economic welfare of the aged by avoiding activities which are inflationary in character and by helping to maintain the purchasing power of fixed pension and annuity benefits.

The Texas Medical Association has implemented the 10 point program by urging county medical societies to undertake an active program on improving the quality and quantity of nursing homes and their personnel, to take the leadership in well-adult conferences on aging, to devote more effort to nurse recruitment, and to initiate a state-wide program on the special problems of aging, other than the disease processes. The Association will give firm backing to the recommendations of the Health Subcommittee of the Governor's Conference on Aging.

Scientific Exhibitors Urged To Make Application Soon

Physicians are encouraged to make application for scientific exhibits for the 1961 annual session of Texas Medical Association to be held in Galveston, April 22-25.

Deadline for applications is January 10. To insure exhibit space, doctors are urged by Dr. J. Edward Johnson of Austin, chairman of the Committee on Scientific Exhibits, to submit applications before that time. Applications should be addressed to Mr. Dale Werner, Texas Medical Association, 1801 North Lamar Boulevard, Austin.

Applications need not be delayed until the exhibitor knows the exact dimensions and details. Indefinite information may be marked tentative and submitted by letter when it is available. Applications received after January 10 may be accepted if space is available. However, a description of such exhibits will not appear in the *Texas State Journal of Medicine* prior to the annual session.

Scientific exhibits will be housed in the Moody Center. The Center is located between the Association headquarters hotels, the Galvez and Buccaneer, making the exhibits easily accessible to visiting physicians.

Stressing that exhibits be simple and inexpensive, the Committee on Scientific Exhibits feels that exhibits should serve two general purposes: (1) to provide an opportunity for display of examples of the scientific work being done by the profession; and (2) to offer the membership a quick review of advances in medicine and to clarify and to emphasize important issues and principles of value in medicine.

For awards, exhibits will be graded on teaching value (30 per cent), practical value (20 per cent), scientific level (20 per cent), personal presentation (10 per cent), eye appeal (10 per cent), and miscellaneous points such as originality and newness (10 per cent). Representative exhibits are especially needed from the following fields: dermatology, otology, laryngology, rhinology, ophthalmology, radiology, orthopedics, pediatrics, and neuropsychiatry.

A popularity poll on scientific exhibits will be conducted during the annual session. Association members will be urged to indicate by ballot which exhibit they feel is most outstanding.

As noted in the October *Journal,* hotel reservations are being honored now by Galveston hotels and motels for the period of the annual session. Requests for accommodations should be sent directly to the hotel or motel of choice. Blocks of rooms at the headquarters hotels will be held until February 20 for Association guest speakers and officials. Thereafter, rooms will be available at these hotels on a first come, first served basis.

The annual session will open Saturday, April 22, with committee meetings, a Symposium on Cerebral Palsy, a Symposium on Nuclear Medicine, and the first meeting of the House of Delegates, and will conclude Tuesday, April 25, with a full day of programs and entertainment.

1961 Anson Jones Awards To Include New Categories

For the first time since its initiation in 1956, the 1961 Anson Jones Award in medical journalism will be divided into four categories.

These will include (1) daily newspapers in cities of 250,000 or more population, (2) daily newspapers in cities of less than 250,000, (3) weekly, semi-weekly, and bi-weekly newspapers, and (4) magazines and trade journals published in Texas.

All newspapers previously were considered in the

same category. By creating the new divisions, the Association believes that a more nearly equal opportunity will be given to smaller daily newspapers, the weekly and semi-weekly newspapers, and to magazines and trade journals. Heretofore, magazines and trade journals were not eligible for consideration.

The awards, presented by Texas Medical Association in appreciation of distinguished accurate lay medical reporting, are named for Dr. Anson Jones, the last president of the Republic of Texas, a journalist, physician, and statesman. Entries may be based on several articles, a regular column, or one particular piece of reporting.

In 1961, a first place award of $250 cash will be made to the individual winner in Category One and a bronze plaque will be given to the winner's newspaper or magazine. In other categories first place winner will receive $100 and his publisher will receive the bronze plaque.

Entries are due by January 10, 1961, and judging will begin immediately. The first place winner in each category will not be eligible to enter the following year (1962) and will be named a judge in his category. Other judges will be a professor from the University of Texas School of Journalism, a member of the Texas Medical Association headquarters staff, and members of the Council on Public Relations and Public Service. Entries will be judged on the basis of (1) accuracy, (2) style, (3) selection of subject matter, and (4) reader interest. Winners will be announced about March 1.

County medical societies can obtain general information and rules about the award by writing to Mr. Jon R. Hornaday, Director of Public Relations, Texas Medical Association, 1801 North Lamar Boulevard, Austin.

★ County Societies

County Society Briefs

The *Tom Green Eight Counties Medical Society* heard O. C. Fisher, United States Congressman, discuss proposed and upcoming legislation concerned with medicine at the October 4 meeting.

Dr. Denton A. Cooley, associate professor of surgery at Baylor University College of Medicine, Houston, and Dr. Don W. Chapman, Houston cardiologist, presented the October 19 scientific program for the *Harris County Medical Society*. Title of the program was "Medical and Surgical Aspects of Acquired Cardiac Disease."

Dr. Louis Gibson, Corsicana, presented a program, "Problems in Vascular Surgery" for members of the *Hill County Medical Society* on October 11.

Palo Pinto - Parker - Young - Jack - Archer Counties Medical Society recently sent about 650 medical books to the Kasturba Medical College in Manipal, India. Books were donated by members after the society had learned that the Indian school needed books.

Dr. George E. Parkhurst, chief of the Addiction Service at the United States Public Health Service Hospital, Fort Worth, presented a paper on "Diagnosis of Narcotic and Barbiturate Addiction and Methods of Withdrawal" at the October 4 meeting of the *Tarrant County Medical Society*.

County Society Meetings On Braceros Are Urged

County medical societies could solve problems concerning braceros by holding educational meetings for doctors, farmers, and insurance company representatives. This is the recommendation of the Texas Medical Association Committee on Bracero Insurance and Medical Service.

Dr. J. G. Rodarte of Temple, committee chairman, has outlined problems faced by the farmer. These include the expense of processing braceros for admission to the United States, cost of insurance premiums, and cost of providing adequate living quarters. Farm bureaus predicted that farmers would not hire braceros this year unless the Labor Department cut back on its wage rate which had been increased from $2.30 to $2.50 per 100 pounds of cotton. However, when Mexico stopped sending braceros, farmers yielded and began hiring for fear of losing this year's crop.

Insurance representatives, Dr. Rodarte reported, in a recent meeting with the committee, were reminded that they cannot contract a doctor for the care of braceros on a monthly or contractual basis, a practice which violates the Medical Practices Act. A physician making such an agreement can have his medical license revoked. Insurance representatives also were advised that complaints about claims or fees could be taken to the county medical society public grievance committee.

Dr. Rodarte noted that the insurance company representatives believe that the bracero program will continue despite higher wages paid to braceros and the use of machinery for picking cotton.

Distaff and the Caduceus

THE YEAR 1960 marks a "first" for pioneering women in Texas medicine with Dr. May Owen becoming the first woman president of the Texas Medical Association. She is the second woman physician to serve as the head of a state medical association.

Her tenure of office seems an appropriate time in which to review the accomplishments of the first pioneering women in the field of medicine in Texas, several of whom are described in George Plunkett Red's book, "The Medicine Man in Texas."

Dr. Sofie Herzog, who came to the United States from Vienna in 1886 and practiced medicine in Brazoria for many years, was one of the first women physicians in Texas. A daughter of a well known Austrian surgeon, Dr. Sofie, as she was called, studied medicine in the best schools of Europe. After practicing in New York for a short time, she moved to Brazoria, where she found the rigid, hardy, and adventurous life she had expected and wanted.

Since South Texas, at that time, was harrassed frequently by feudal battles and bandits, much of her time at first was spent giving emergency treatment to wounded men. Her skill as a surgeon was soon established and she performed many operations to remove bullets. She took special pride in her skill as an extractor of bullets and strung the bullets into a necklace which she wore constantly. She requested that it be placed in her casket at her death.

Dr. Sofie was local surgeon for the Gulf Coast Lines at Brazoria. Her railroad work brought her many strange and thrilling experiences. She rode in box cars, on hand cars, on engines—in fact, in or on anything that would get her to the sufferer, regardless of the time of day or risk to herself. In addition, to her vigorous practice, Dr. Sofie was the mother of 15 children. She died at the age of 76.

Houston Pioneer

The first woman to practice medicine in Harris County, Dr. Margaret Ellen Holland, practiced in Houston for over 40 years.

Born in Newburyport, Mass., September 10, 1840, she had a trying childhood. Her mother died when she was 8 years old, and her father a short while later. She then was adopted by a prosperous farmer and land owner, Jacob Powell.

Dr. Holland attended a school near Sterling, Ill., and at the age of 21, was sent to Chicago to attend the Woman's Medical College. There she was graduated in June, 1871. She came to Houston with Major and Mrs. R. B. Baer. Mrs. Baer was an invalid for many years. Dr. Holland, her private physician, cared for her until Major Baer's death in 1919.

Dr. Holland was one of the early and valued members of the Art League and Parent-Teachers' Association of Houston. Although she never married, she reared and educated three of her brother's children and a niece of Mrs. Baer. She helped many young people to get their education by supplying the needed funds. She died August 31, 1921, a much beloved and honored woman and physician.

Early Physician Teaches

Another early woman physician in Texas was Dr. Charlotte Schaeffer, a native of San Antonio, born June 24, 1874.

A graduate of the San Antonio High School, she enrolled in the University of Texas Medical Branch

at Galveston in 1900. She did postgraduate work at the University of Chicago and Johns Hopkins.

In 1901, Dr. Schaeffer became demonstrator of histology at the Medical Branch and resident pathologist at John Sealy Hospital. In 1910, she was elected as associate professor in biology and histology at the Medical Branch. In 1915, she was made a full professor of embryology and in 1925, full professor of histology.

Dr. Schaeffer was held in such esteem that at her death, on June 27, 1927, at John Sealy Hospital, the Medical School cancelled its graduation festivities and the final ball was not held.

La Porte Woman Physician

An early pioneer physician in La Porte, Dr. Juliet E. Marchant came on the first excursion train to La Porte in 1893, when the original La Porte Development Company of Syracuse, N. Y., put on a sensational advertising campaign for the town. She remained there the rest of her life.

She was a graduate of the University of Michigan in 1877, and practiced for several years with a woman physician partner in Rome, N. Y., before moving to La Porte. Dr. Marchant owned a farm in the Lenox community and a residence in La Porte. Since she did much charity work, she had a modest income in the surrounding country. Her neighbors told of how she walked many miles to her calls. The mud was often too much for a horse-drawn conveyance but never too deep for the doctor when her services were needed. During World War I, the doctor was liberal to all war subscriptions and her knitting was done with dispatch and accuracy. Dr. Marchant died in 1929.

Although opinions differed then and now concerning women's place in medicine, the lives of these women need only be read to prove their value as doctors.

A Doctor Takes Her Case Against Socialism to Her Patients

Dr. Ruth M. Bain, Austin general practitioner and surgeon, realizing that her fellow physicians were aware of the hazards of socialized medicine but that perhaps her patients were not, originally wrote a letter of "personal diplomacy" to her patients. Each was signed individually by her. The following is a slightly shortened version of her letter.

It is 4 a.m. I have just talked by telephone with a patient, and, I believe, relieved her anxiety. She probably will be back to sleep before I am.

I wonder how this will work some 10 years or less from now—if the government intervenes between me and my patient.

Lethargy—lack of information and concern—is leading us toward such intervention. I am greatly disturbed that the major candidates for the presidency this year favored some form of government paid-for (socialized) medicine. Admittedly, it is on a limited basis at this time—but how long will it stay limited? If precedence set in other legislation is followed, the scope of the program will be broadened each election year.

This year the scope was broadened to include "the aged." Nobody knows what the needs of the aged are, but the issue offered a tremendous emotional appeal.

Everybody—if he lives long enough—will probably have some health problem, but is this his greatest difficulty? Many have nutritional problems—not caused by the lack of available food—but by lack of someone with whom to eat or to prepare it. Will government medicine change this?

The medical profession has been accused of selfish interests in efforts to defeat or delay socialized medicine. This is without factual basis.

Do you know of any other profession whose every effort is to eliminate the need for its services? The medical profession is made up of rugged individualists. This is the type of person who makes a good doctor. It takes a fair amount of ruggedness (guts, if you wish) to carry the responsibility and make the decisions necessary to practice medicine. This type individual does not tolerate regimentation.

I am convinced that if socialized medicine is accomplished, the type of individual who chooses

medicine will change—and not for the best. Regimentation has a leveling effect—it breeds mediocrity. This will halt the type of progress which has added 20 years to average life expectancy in the last 50 years.

Is it selfishness that prompts me to fight these developments which I feel will be bad for everybody concerned—especially for the future generations who will be paying the bills? Did you know that social security taxes by 1970 are scheduled to reach the rate of 9 per cent without broadening the program? Are you aware that in Sweden, 25 per cent (one-fourth) of all paychecks is withheld for social security which includes the socialized medicine program of that country?

Do you spend one week's salary per month paying medical bills?

I earnestly desire to stimulate you to find out more about bills before your Congress and to make your wishes known to your elected representatives. If you want socialized medicine—I hope you will be happy. If you do not want socialized medicine, you must work to avoid it—or you will get it piecemeal by default over the next 5 to 10 years. It is nearly a reality now.

I hope that enough persons interested in preserving the American way of life will be inspired to action. The current system admittedly has defects. But, then, we are only human.

—RUTH M. BAIN, M.D., Austin.

MEMORIAL LIBRARY

Films Newly Acquired

THE INNOCENT PARTY (1960). 16mm., sound, color, 27 min., C-101

A new film dealing with syphilis. The poignant story of a teen-ager who after a pick-up date, learns that he has become infected with syphilis. With the least amount of moralizing, the film shows his worry and realization of the necessity to bring in his fiance to the doctor for examination. The film will ring true to the age group for which it is designed. It is up-to-date, tactful, and in good taste, yet tells its story.

THE SILENT WITNESS (1960). 16mm., sound, black & white, 28 min., D-71

The importance of using chemical tests for determining the amount of alcohol in the blood of a man charged with drunken driving is portrayed. In a dramatic court room scene, the film illustrates how the tests are performed, how the test devices operate, and how the tests are viewed by the court.

SECOND CHANCE (1959). 16mm., sound, black & white, 28 min., D-73

Based on a case history of a 63 year old fireman, the film depicts "Pop" Rankin's battle for rehabilitation after a paralyzing stroke. It points out the advantages of beginning rehabilitation efforts early, and the roles of the family and the physician in meeting physical and emotional problems.

VARICOSE VEINS (1958). 16mm., sound, color, 7 min., B-15

Animated diagrams show the structure and function of the veins, how the valves work, and how the valves may break down causing varicose veins. Animated symbols highlight symptoms and treatment and general recommendations for patients.

The library has recently acquired a second copy of the films, STUDENT NURSE and HUMAN HEREDITY.

Gifts to the Library

Dr. T. J. Archer, Jr., Austin, 4 books, 30 journals, 36 pamphlets.

Austin Anesthesiology Group, Austin, 367 journals.

Mrs. Haskell D. Hatfield, El Paso, 373 journals.

Dr. Henry L. Hilgartner, Jr., Austin, 93 journals, 10 pamphlets, 6 reprints.

Dr. J. Edward Johnson, Austin, 23 reprints, 7 journals.

Dr. Sam N. Key, Jr., Austin, 16 journals.

Dr. James E. Kreisle, Austin, 8 journals.

Mrs. E. H. Marek, Yoakum, 57 books, 27 journals.

Dr. William P. Morgan, Austin, 337 journals.

Dr. Morris Polsky, Austin, 1 journal.

Dr. Clift P. Price, Austin, 24 journals.

Dr. John R. Rainey, Jr., Austin, 17 journals.

Dr. Berthold H. Reinarz, Austin, 334 journals, 176 pamphlets, 1 book.

Dr. Joe C. Rude, Austin, 124 journals.

Rugeley & Blasingame Clinic and Hospital, Wharton, 5,442 journals.

Dr. Witten B. Russ, San Antonio, 32 journals.

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Book Notes

Diuresis and Diuretics

An International Symposium, H. SCHWIEGK, Chairman, Edited by E. BUCHBORN and K. D. BOCK. 382 pages. Berlin, Göttingen, Heidelberg, Springer-Verlag, 1959.

The Lifespan of Animals

Ciba Foundation Colloquia on Ageing. 324 pages. $9.50. Boston, Little, Brown and Company, 1959.

Babcock's Principles and Practice of Surgery

Edited by KARL C. JONAS, B.S., M.D., M.S. (Surg.), F.A.C.S., F.I.C.S., Department of Surgery, Temple University School of Medicine and Hospital, Philadelphia, Pennsylvania. 1,501 pages. $18. Philadelphia, Lea & Febiger, 1954.

This book is the extensive revision of *Principles and Practice of Surgery* by W. Wayne Babcock, M.D., Emeritus Professor of Surgery, Temple University School of Medicine, 1944. Dr. Jonas was trained under Dr. Babcock and was associated with him. The author believes that the book should "provide the student and practitioner with an organized presentation of general surgery and the surgical specialties which is characterized by maximum authority." To this end, collaborating authors were chosen because of their outstanding ability in the subjects which they represent. They are teachers, and present their material in the fashion they have found to be most successful. Emphasis is placed on the principles of surgical diagnosis and treatment. Surgical techniques are included only when necessary for thoroughness, as in fractures or plastic surgery. The practitioner of surgery who needs a reference book for problems which arise in his specialty will find this a well organized textbook brought up to date.

Anatomy of the Human Body

HENRY GRAY, F.R.S. Edited by Charles Mayo Goss, M.D., Professor of Anatomy, Louisiana State University School of Medicine, New Orleans. ed. 27 (American centennial). 1,458 pages. $17.50. Philadelphia, Lea & Febiger, 1959.

That their book should remain the most popular standard text of anatomy for 100 years and the cornerstone of countless medical libraries should be proof enough of the genius of Henry Gray and the editorial powers of Dr. Charles Mayo Goss.

This centennial edition is considered unsurpassed in arrangement, which has improved in each edition. When one considers the mass of material to be assembled, errors that have crept in during revisions are minor, balanced with the labor-saving, practical text and its accuracy and clarity of presentation.

The cardiovascular system has been divided into three parts: heart, arteries, and veins, each with sections on embryology. The section on central nervous system has been rewritten and simplified by confining the material to facts firmly established by clinical and experimental research. Controversial matters usually are omitted. Extensive cross references to the illustrations have been used to prevent repetition.

The new Paris nomenclature has been adopted throughout the book with few exceptions.

All familiar aspects of Gray's Anatomy have been retained and many of Carter's original illustrations have been preserved. As a text covering all aspects of anatomy, it is still leading in its field.

Virus Virulence and Pathogenicity

Ciba Foundation Study Group. 105 pages. Boston, Little, Brown and Company, 1960.

Intraarterial Infusion of Procaine in Therapeutic Practice

N. K. GORBADEI. 135 pages. $7.50. New York, Consultants Bureau, 1960.

Cancer of the Cervix

Ciba Foundation Study Group. 110 pages. $2.50. Boston, Little, Brown and Company, 1959.

Atlas of Anatomy and Surgical Approaches in Orthopaedic Surgery—Upper Extremity

RODOLFO COSENTINO, M.D., Assistant Professor in Orthopaedic Surgery, University of La Plata, Argentina; Research Associate, Department of Orthopaedic Surgery, State University of Iowa, Iowa City. 192 pages. $10.50. Springfield, Ill., Charles C Thomas, 1960.

Dr. Cosentino's first volume of *The Atlas of Anatomy and Surgical Approaches in Orthopaedic Surgery—Upper Extremity* is a beautiful demonstration of anatomic dissection of the upper extremity. Great care has been exercised in the planning of thjs volume; it is unusually simple and shows anatomic structure in great detail through excellent photography.

Each separate area is presented anatomically from skin to bone or joint. This is followed, in order, by a photograph of the part on which the surgical incision is outlined, roentgenogram of the normal bone or joint, and, finally, the accepted and commonly used surgical approaches showing the various structures encountered. Anterior, posterior, medial, and lateral incisions are demonstrated where applicable.

The author states in the introduction that his only purpose is to demonstrate with accuracy the anatomic structures encountered by the operator from layer and layer. This he has done without unnecessary duplication and without at any time losing sight of his objective.

—Martin V. Atchison, M.D., Harlingen.

An Atlas of Normal Radiographic Anatomy

ISADORE MESCHAN, M.D., Professor and Director, Department of Radiology, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, N. C. With the assistance of R. M. F. Farrer-Meschan, M.D., Research Associate, Department of Radiology, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, N. C. ed. 2. 779 pages. $20. Philadelphia and London, W. B. Saunders Company, 1959.

Showing a marked improvement in the scope and coverage of the basic fundamentals of radiographic anatomy, Dr. Meschan's second edition might be termed a text in living anatomy and physiology.

The photographs and radiographic reproductions are of fine quality, and they are well utilized for radiographic positioning and anatomy. Special attention is given to the variations of the normal which are so important in the training of technicians, residents, and x-ray department personnel. Without this basic information the beginner makes many more errors than he should.

The correlation of the gross and radiographic anatomy is well done, and it is well to commend the authors for giving the detailed attention to the developmental anatomy from infancy to adulthood.

Included in this comprehensive work on the subject is enough history, physics, and actual mechanics of x-ray equipment operation to make it practical. The principles of image production with its geometry and steps in the production of a well balanced radiograph are portrayed in terms that are understandable. This edition is materially improved by the addition of many special procedures.

One might comment, in closing, that Dr. Meschan's book is good for beginners and contains a lot of good normal anatomy and physiology for us older ones too. I concluded that it was time I had a complete review of the subject. Most readers will find as I did that there are bits of information which they did not know quite as well as they thought they did.

—Joe C. Rude, M.D., Austin.

Clinical Prosthetics for Physicians and Therapists

MILES H. ANDERSON, Ed.D., Director, Prosthetics Education Project, School of Medicine, University of California, Los Angeles; CHARLES O. BECHTOL, M.D., Professor of Surgery, School of Medicine, University of California, Los Angeles; and RAYMOND E. SOLLARS, Associate Director, Prosthetics Education Project, School of Medicine, University of California, Los Angeles. 391 pages. $10.50. Springfield, Ill., Charles C Thomas, 1959.

The information in this book is the result of many years of work by many people. Quoting the opening, "Very little research has been done. The occasional development of a device or technique usually came about through the efforts of an amputee to solve his own problem or the work of a prosthetist in meeting the needs of a specific case."

It is now possible through the organized study to write a prescription for a prosthesis which will specify all the important factors. The materials presented are used as texts for courses in clinical prosthesis in the Prosthetics Education Project, School of Medicine, University of California, Los Angeles. The project is largely supported through a grant from the Office of Vocational Rehabilitation, Department of Health, Education and Welfare.

Significant Trends in Medical Research

CIBA FOUNDATION SYMPOSIUM, 335 pages. $9.50. Boston, Little, Brown and Company, 1959.

This volume on medical research is the fiftieth volume of the Ciba Foundation and celebrates the tenth anniversary of its opening. The subject was suggested by Professor A. Von Muralt and planned by Dr. Wolstenholme. Sir Harold Himsworth acted as chairman of the symposium. The program speakers were invited to pick the developments in the past 10 years which they believed would prove most significant in the next 10 years. Professors R. F. Loeb, Columbia University; L. Pauling, California Institute of Technology; and D. W. Richards, Columbia University; and Director J. A. Shannon, National Institute of Health, Bethesda, Md., represented the United States.

This should prove one of the most memorable of the foundation's symposia.

First Aid— Diagnosis and Management

WARREN H. COLE, Professor and Head of the Department of Surgery, University of Illinois College of Medicine; Surgeon-in-Chief, Research and Educational Hospitals, Chicago, and CHARLES B. PUESTOW, Clinical Professor of Surgery, University of Illinois College of Medicine and Graduate School; Chief, Surgical Service, Veterans Administration Hospital, Chicago. 406 pages. $6.25. New York, Appleton-Century-Crofts, Inc., 1960.

This revised and expanded text is an authoritative guide to the emergency care of all types of injuries, shock, or medical emergencies resulting from accidents, industrial hazards, civilian or military casualties including atomic blast, burn, and radiation types.

Subjects such as wounds, burns, hemorrhage, shock, poisoning, bandaging, splinting, transportation of the injured and physical failure are covered in detail, with emphasis on what not to do, as well as on what to do.

Since the first edition, one additional chapter, "Injuries of the Hand," has been added. Although prepared for physicians and students of the sciences, it also is useful as a training guide for rescue squad workers, civilian defense trainees, and police and fire department catastrophic squads.

X-Ray Diagnosis of the Alimentary Tract In Infants and Children

EDWARD B. SINGLETON, M.D., Director of Radiology, Texas Children's and St. Luke's Hospitals, Houston; Clinical Assistant Professor of Radiology, Baylor University College of Medicine; Clinical Associate Radiologist, University of Texas Postgraduate School. 342 pages. $11. Chicago, The Yearbook Publishers, Inc., 1959.

It is proper and fitting that this book should be dedicated to the author's father. It is one of the reviewers pleasant experiences to have had the privilege of absorbing some clinical training from a surgical approach as an instructor in radiology at the medical branch from the author's father.

One is impressed with the large amount of reference material listed in connection with each subject, for it is then that one becomes aware of the extensive study of the literature that went into the preparaion of this book.

It is a pleasure to note the correlation of anatomy, clinical information, pathology and roentgen findings of the various conditions discussed so that collateral reading is unnecessary unless one wishes to pursue a point in great detail, in which case the references furnished put one well on the way. The emphasis on the radiologist seeing the patient and knowing the clinical and physical findings is very well put and important, if diagnosis is to be accurate and furnish the greatest possible information about the patient's lesion. The inclusion of embryology in the discussion of congenital anomalies of the gastrointestinal tract is very helpful.

Emphasis on the recognition of the normal and its variations in the various ages of children examined is an important base line to establish for the understanding of the abnormal. This orderly manner of analysis too often is neglected.

The entire medical profession of Texas should be benefitted by such worthwhile publications by one of its own members. It significes the acceptance of responsibility and the reaching of academic maturity when such a fine presentation as this publication is produced.

—Joe C. Rude, M.D., Austin.

Tabulating Equipment and Army Medical Statistics

BRIG. GEN. ALBERT G. LOVE, USA (Ret.); COL. EUGENE L. HAMILTON, MSC, USAR, Chief, Medical Statistics Division, Office of the Surgeon General; and IDA LEVIN HELLMAN, M.Sc., The Historical Unit, United States Army Medical Service. 189 pages. Washington, D. C., Office of the Surgeon General, Department of the Army, 1958.

This small volume tells the story of the evolution of the Army Statistics Program from 1818 to 1908. It details the statistical work from 1917 to the present time. Before World War I, an efficient method of hand counting had been evolved; after this time, electric sorting and tabulating was available.

This monograph is one of the few reference books available in the study of statistics. It describes how to set up a system of records with a minimum of expense and materials.

Microbial Variation

V. D. TIMAKOV, Editor, Member of the Academy of Medical Sciences of the U.S.S.R. 197 pages. New York, Pergamon Press, 1959.

A Traveler's Guide to Good Health

COLTER RULE, M.D. 266 pages. $3.95. Garden City, New York, Doubleday & Company, Inc., 1960.

Principles of Human Pathology

EDWARD B. SMITH, M.D., Professor of Pathology, PARKER R. BEAMER, Ph.D., M.D., Professor of Pathology, FRANK VELLIOS, M.D., Associate Professor of Pathology, and DALE M. SCHULZ, M.S., M.D., Associate Professor of Pathology, Indiana University School of Medicine, Indianapolis. 1,088 pages. $15. New York, Oxford University Press, 1959.

This new textbook by four well known Indiana University pathologists represents a refreshing new venture into pathology. To the classic anatomic point of view, they add an interesting, stimulating approach to pathology: that of the living, functioning human being. Although all four authors are eminently qualified in anatomic pathology, Smith is outstanding in disorders of blood and blood forming organs; Beamer is an authority in immunology, bacteriology and related fields; Schulz is a highly qualified medical chemist; and Vellios is well known in forensic and surgical pathology.

Pathology is not primarily presented as a science of the morgue, but rather as a vital correlation of basic human pathology with clinical medicine. The first portions of the book are dedicated to the more traditional, wider aspects of pathology, especially anatomic pathology. The bulk of the book, however, is dedicated to the clinical pathological approach, stressing biochemistry, bacteriology, and its branches, as well as physiology. The book is excellently written and as excellently printed, but the black and white photographs, in certain instances, leave something to be desired, for example, the inferior photograph of congenital deformity of the ear.

The ventures into the clinical pathologic aspect of disease are excellent innovations. Some of the sections on bacterial toxins, metabolic states, and even forensic pathology are welcome additions to the usual dry-as-dust textbook of pathology. The work is completed by an exhaustive index.

—John J. Andujar, M.D., Fort Worth.

Radiation Biology and Cancer

A collection of papers presented at the Twelfth Annual Symposium on Fundamental Cancer Research, 1958. 485 pages. $8.50. Austin, The University of Texas Press, 1958.

Papers presented are concerned primarily with fundamental radiobiology and its applications and relationship to neoplasia. Since the roentgen ray and radioactivity were discovered at a period when cancer research was just beginning, radiation research and cancer research have had parallel development, a fact pointed out by Dr. R. Lee Clark, Jr., in his introduction.

Anatomic cellular study must be replaced by modern physiopathologic studies. Particular attention must be given to secretory capacity and responsiveness to inhibitory and stimulating substances, thereby allowing simultaneous investigation of diagnosis, pathogenesis, and possible therapy.

Mammary tumor virus apparently acts as a carcinogen in conjunction with estrogens. Possibly similar viruses will be discovered, but it seems unlikely that most neoplasms induced by radiation are attributable to the activation of viruses, as previously thought. Essentially the same type of tissue injury is produced by ionizing radiation, irrespective of the source—external or internal. Nearly all forms of ionizing radiation have qualitatively similar effects. These effects usually become apparent only after a latent period, which varies from a few minutes to many years. The biologic effects of ionizing radiations are attributed to absorption of energy by the cells and the tissues.

In another paper, experimental evidence is offered that the principal mutagenic effect of ultraviolet radiation is modification of the nucleic acid precursors present in the cell during irradiation.

In a paper concerning tissue grafts, it was found possible to abrogate the resistance in animals of foreign tissue grafts, even in a heterologous host, by use of conditioning with roentgen radiation or cortisone. The mechanism which induces this abrogation is not delineated sharply by the means employed. Roentgen radiation and cortisone produce manifold effects on the host, any one of which may prevent satisfactory grafting.

In discussion of the effect of radiation in human genetics by Dr. W. J. Schoal of the Department of Human Genetics, University of Michigan, the data available on the mutagenic effects of radiation in man are summarized. There is a reasonably good relationship between the variation in size ratio of the offspring to the amount of parental exposure. The many attempts to calculate the genetic damage after the increased exposure of recent years and the problems involved are fully discussed.

—Francis E. O'Neill, M.D., San Antonio.

Pediatric Pathology

DANIEL STOWENS, M.D., Pathologist, Children's Hospital Society of Los Angeles; Associate Professor of Pathology, University of Southern California; Diplomate, American Boards of Pediatrics and Pathology. Formerly, Registrar, American Registry of Pediatric Pathology, Armed Forces Institute of Pathology, Washington 25, D.C. 648 pages. $20. Baltimore, The Williams & Wilkins Company, 1959.

The author is to be complimented for his concept of a book that deals exclusively with pathology of the pediatric age group. His delineation of the differences in emphasis in postmortem examination of the newborn is noteworthy. Throughout the book, as in typhoid fever and tuberculosis, an attempt is made to give pathologic changes peculiar to childhood.

It is unfortunate, however, that several entities of particular interest to the pediatrician, (phenylketonuria, nephrosis, hemophilia), are dismissed in cursory fashion. The author indulges in many long clinical descriptions, which contain inaccuracies as well as misleading statements. For example, high white blood cell counts are said to be characteristic of histoplasmosis (clinical form not stated). Seemingly, the author has attempted to write a text correlating the pathologic with the clinical. In some areas he has been successful; in others he has merely listed clinical findings and appended the pathological picture, without relating the two.

It is difficult to justify the lack of gross pathologic reproductions or diagrams, especially in chapters on the heart and gastrointestinal tract. Reproductions of histologic sections are excellent; however, absence of description beneath the plates impairs their reference value for the pediatrician.

—Helen H. Woods, M.D., Corpus Christi.

Breast Cancer

The Second Biennial Louisiana Cancer Conference, ALBERT SEGALOFF, M.D., Editor, Director of Endocrine Research, Alton Ochsner Medical Foundation; Associate Professor of Clinical Medicine, Tulane University School of Medicine. 239 pages. $5. St. Louis, The C. V. Mosby Company, 1958.

This complete study of breast cancer is composed of the experiences and discussions of distinguished representatives of pathology, surgery, internal medicine, endocrinology, radiology, epidemiology, biochemistry, zoology, virology, and psychiatry.

Breast cancer can kill rapidly or progress slowly. The mortality rate is 10 times higher in England, Wales, and Denmark than in Japan. Rates for women in a number

of countries show a steady increase. The disease apparently is least frequent in women who have borne and nursed children; the influence of trauma cannot be assessed at present.

Mammary carcinoma has a biologic variability from 50 per cent of cases with small primary foci and distant spread to 20 per cent of large local extent without extramammary extension.

Breast cancer may show a wide range of histologic patterns in the same breast. The main value of cytologic study of breast secretions is to assist in diagnosis and management of benign conditions. The bleeding nipple is rarely a sign of breast cancer.

Present ideas on therapy are in a state of flux. The three major techniques proposed are the Holstead radical mastectomy; the McWhirter simple mastectomy followed by irradiation; and extension of the scope of radical mastectomy.

Criteria of operability in breast cancer are discussed. Apparently the most dreaded complication to be avoided is carcinomatosis of the chest wall.

Some surgeons favor resection of the internal mammary chain because they believe it offers greater salvage rates. Others are of the opinion that by the time cancer reaches these sites, it has spread to other areas beyond removal.

Radiation apparently is reserved by some surgeons for treatment of cases considered inoperable with radical mastectomy. Initial node biopsies determine whether radical removal is feasible.

With proper hormonal management, some patients with distal spread live many years.

This book is valuable reading for the physician who has to treat breast cancer. Although the reader may be overwhelmed by the varied theories of definitive therapy, the collection offers years of experience and careful analysis of all facets of a difficult problem.

—Ray Cruse, M.D., Hearne.

Soil Grass and Cancer

ANDRÉ VOISIN, Membre de l'Académie d'Agriculture de France Chargé d'Enseignement à l'École Nationale, Vétérinaire d'Alfort (Paris). 267 pages. $15. New York, Philosophical Library Inc., 1959.

The text of this work, rewritten and enlarged, is based on the author's lectures and conferences at l'École Nationale Vétérinaire d'Alfort, Paris, and for Veterinary Societies in France and abroad.

In the foreword, Allan Fraser, University of Aberdeen, confesses that he finds the book intensely interesting. "If, as Voisin suggests, the control and prevention of cancer lies in a better understanding of human nutrition it would be a notable advance." He finds the hypothesis a little too simple. Much of the most recent information on soil and human nutrition has been compiled, and those interested can form their own conclusions.

From Fish to Philosopher

HOMER W. SMITH. 291 pages. Summit, N. J., Ciba Pharmaceutical Products, Inc., 1959.

Nine Months' Reading

ROBERT E. HALL, M.D., 186 pages. $2.95. Garden City, New York, Doubleday & Company, Inc., 1960.

Breakdown

ROBERT DAHL. 288 pages. $3.95. Indianapolis, The Bobbs-Merrill Company, Inc., 1959.

The Teen-age Years

ARNOLD ROTH, M.D., 284 pages. $3.95. Garden City, N. Y., Doubleday & Company, Inc., 1960.

The Life Extension Foundation Guide to Better Health

HARRY J. JOHNSON, M.D., President, The Life Extension Foundation. 211 pages. $4.95. Englewood Cliffs, N. J., Prentice-Hall, Inc., 1959.

Hospital Construction at Peak But Beds Increasing with Population

Although hospital construction is at an alltime peak, the number of hospital beds in the United States is not increasing much faster than the nation's population, the Health Insurance Institute reports. From the beginning of 1948 to the beginning of 1959, civilian hospital beds increased by 30 per cent while the population climbed 20 per cent, Institute figures show.

Greatest growth from 1948 to 1959 was in the number of general and chronic hospital beds, those in general hospitals increasing 39 per cent while chronic hospital beds went up by 42 per cent.

Mental hospital beds rose 25 per cent. However, the number of tuberculosis beds increased less than 1 per cent, and actually declined from a peak of more than 101,000 in 1954. New York had the most beds in each of the four hospital categories, and more mental hospital beds than general hospital beds (as did seven other states and the District of Columbia).

The number of persons entering all hospitals has risen steadily, the report showed.

Foreign Doctors in U. S. Increase

The number of foreign physicians training in United States hospitals has almost doubled since 1954, reports the Institute of International Education in a recent survey.

This year (1959-1960), according to the institute, hospitals reported 9,457 foreign physicians in training, an increase of 13 per cent over the previous year. Part of this rise, however, resulted from 9.3 per cent increase in the number of hospitals reporting to the survey.

Physicians from the Far East again led the foreign medical delegation this year with 38.5 per cent of the total number, followed by 19.4 per cent from Latin America, 18.1 per cent from the Near and Middle East, and 16.3 per cent from Europe. The Philippines, with 2,319, was again the largest single source of foreign men and women studying medicine here.

RECENT DEATHS

DR. THOMAS F. BRYAN

Dr. Thomas Ford Bryan, Dublin, Texas Medical Association's General Practitioner of the Year in 1957, died September 18, 1960, in a Stephenville Hospital following a brief illness.

He had broken his hip in a fall at his home on September 9, and was stricken with pneumonia and other complications.

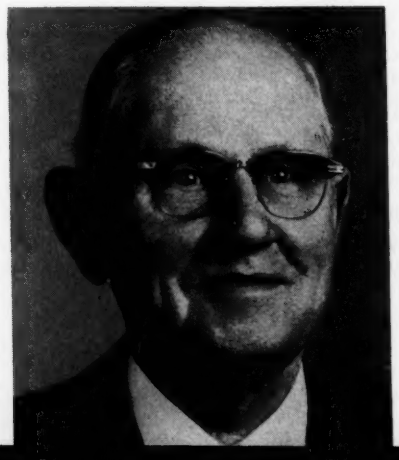
Born on a farm near Whitney on September 11, 1874, Dr. Bryan was the son of Nicholas Bryan and Elizabeth (Ford) Bryan. He attended Iredell schools, college at Walnut Springs, and Baylor University at Waco. He was graduated from the University of Texas Medical Branch at Galveston on May 12, 1900, and he served his internship at St. Mary's Infirmary at Galveston in 1900. In later years, he undertook postgraduate work in Chicago, New Orleans, and New York.

Miss Ora May Lane, whom he married in June, 1903, died in June, 1913. He married Miss Anise Harber of Dublin on December 16, 1930.

From 1901 until 1907, he practiced in Iredell, and from 1907 until his death, he practiced in Dublin. In 1898 and 1899, he served in the medical corps as a private in the Spanish American War in Puerto Rico; and in 1918 and 1919 during World War I, he served as a captain in the medical corps.

Dr. Bryan was a member of the American Medical Association, the Texas Medical Association, and the Erath - Hood - Somervell Counties Medical Society, which had nominated him for the General Practitioner of the Year Award. The county society now has established in his name a permanent scholarship for boys from Dublin at John Tarleton College, Stephenville. He also belonged to the American Academy of General Practice, the Texas Academy of General Practice, and the Southern Medical Association. He was a member of the First Baptist Church, the Masons and Shriners, and the Rotary Club and Development Club of Dublin. He had been president and secretary of his county medical society, and president of the Development Club. In addition, he was local surgeon for the Missouri-Kansas-Texas and Santa Fe Railroads.

DR. THOMAS F. BRYAN



During his internship in Galveston, the tragic hurricane of 1900 struck the city, and Dr. Bryan was among those marooned in St. Mary's Infirmary on the island. During this time, a single story annex of the hospital was washed away by the flood, although through the efforts of attendants on duty, only about six lives were lost.

When Dr. Bryan first began practicing, it was via the horse and buggy method, but he bought his first automobile in 1913—which proved many times to be ineffective because of mud roads. He then would walk to the nearest farm house to ask a farmer to hitch up a team and pull his automobile out of the mud.

In 1907, Dr. Bryan established his practice at Dublin with Dr. J. R. Sessums who died September 15, 1960, at San Angelo. The partnership lasted for 21 years—until 1928.

Dr. Bryan was one of the leaders and organizers of the Dublin Hospital, said to be one of the most modern in his area.

He was preceded in death by his parents and a sister, Mrs. May Warner; two brothers, Dr. Frank Bryan, a dentist, and Edd Bryan, a Texas artist.

He is survived by his wife and two sisters, Mrs. C. C. Anderson of Dallas and Mrs. R. L. Roberts of Wichita Falls, several nieces and nephews.

DR. E. H. MAREK

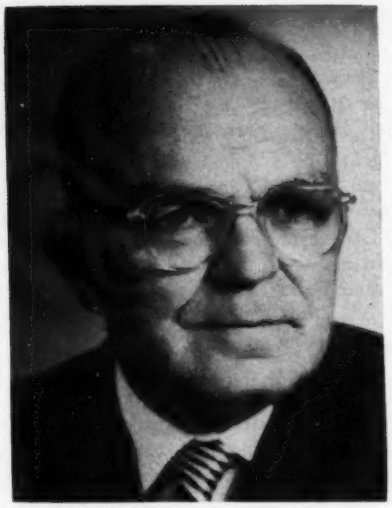
Dr. Emil Henry Marek, Yoakum, died September 13, 1960, in a San Antonio hospital. He had been in a coma resulting from a series of strokes 5 days before his death.

Dr. Marek was born in Brenham on January 14, 1888, the son of Joseph J. Marek and Amelia (Krahl) Marek. In 1908, he was graduated with a degree in pharmacy from the University of Texas at Austin, and in 1915, he was graduated from the University of Texas Medical Branch at Galveston. He interned at Philadelphia General Hospital in Philadelphia and served briefly at the United States Marine Hospital in Galveston and with the United States Public Health Service in New Orleans.

For a short time he practiced in Brenham, moving then to Yoakum, where he served as city health officer for 29 years. He also was the physician for the Southern Pacific Railroad at Yoakum.

A member of the American Medical Association, the Texas Medical Association, the Southern Medical Association, and the Lavaca County Medical Society, Dr. Marek had served as vice president of the Texas

DR. E. H. MAREK



DR. CLINTON E. ADAMS

Association of Obstetricians and Gynecologists. He also belonged to Phi Beta Pi medical fraternity, the Masons and Shrine, the Hermann Sons, the Alumni Association of the University of Texas, and the Inter-County Clinical Society. He was a life member of the P-TA Congress, a charter member of the Yoakum Rotary Club, and a director of the Yoakum Chamber of Commerce. He was a lifetime member of the Lutheran Church.

Survivors include his wife, Mrs. Lucille Robison Marek of Yoakum; two sisters, Mrs. Frank Malina and Mrs. Henry Emshoff, both of Brenham, and several nieces and nephews.

DR. CLINTON E. ADAMS

Dr. Clinton Earl Adams, Abilene, died September 24, 1960, in Abilene.

Born August 19, 1892, in Red Rock, Dr. Adams was the son of Edward and Nola (Lentz) Adams. He was educated in the Abilene public schools, before attending Hardin-Simmons University in Abilene. He was graduated from Baylor University College of Medicine in May, 1926, at that time located in Dallas, and he interned at the Baylor Hospital in Dallas. He did postgraduate work at the Mayo Clinic in Rochester, Minn.; Tulane University in New Orleans; and Cook County Hospital, Chicago. He became a fellow of the American College of Surgery in 1937. He did research work in cancer and presented many papers before state medical groups.

Dr. Adams served as a private in World War I and entered the service in 1941, serving until 1945. He retired as a colonel. He was post surgeon for Veterans of Foreign Wars, Post. No. 2012, at the time of his death. He began his practice in Abilene in 1926, specializing in gynecology and surgery.

Dr. Adams was a member of the Texas Medical Association, the American Medical Association; Taylor-Jones Counties Medical Society, which he served as president two terms; Hendrick Memorial Hospital staff, serving as past president of the staff; and the Executive Committee of the St. Ann Hospital Staff. He also served as a member of the Executive Committee of the Texas Division of the American Cancer Society, and as executive director of the Taylor-Jones Counties Tumor Clinic. He assisted in the organization of the Texas Association of Blood Banks, serving as chairman of the first clearing house committee of the blood banks.

Serving as city commissioner, Dr. Adams was mayor pro tem in 1948. He helped pioneer the commission-manager government in Abilene. He also was a member of the Chamber of Commerce Board of Directors; Lion's Club, serving as president for two years; and Abilene Country Club. He was past president of the Chisholm Trail Council of Boy Scouts of America and was recognized in 1940 when he was awarded the Silver Beaver Award for service to the scouts. A member of the Baptist Church, Dr. Adams was with the Royal Arch Commandery, a Mason, and a Shriner. His hobbies were golf and music.

Dr. Adams and Miss Ruby Davis were married July 14, 1927, in Dallas; she died August 1, 1949. Survivors include two daughters, Nita Frances Adams of Abilene and Mrs. B. B. Wilson of El Paso; a sister, Mrs. Ralph Fuller of Abilene; and two brothers, Rudolph Adams of Pecos and Rev. Eugene Adams of San Juan, Puerto Rico.

DR. JAMES H. MARSHALL

Dr. James Humphrey Marshall, Dallas, died August 30, 1960, one day earlier than his eightieth birthday. He was born August 31, 1880, in Kansas City, Mo.

He had attended elementary school in Springfield, Mo.; Odessa College in Odessa, Mo.; and William Jewell College in Liberty, Mo. He was graduated in 1906 from the Fort Worth School of Medicine, which later was merged with Baylor University College of Medicine, now in Houston. He did postgraduate work in Chicago and New York.

He interned at the Pine Street Sanitarium in Texarkana in 1906 and 1907. From 1907 until 1912, Dr. Marshall practiced in Comanche and from 1912 until 1957, he practiced in Dallas. First a general practitioner, he specialized in traumatic and general surgery after 1935.

In 1958, he was elected an honorary member of Texas Medical Association, and he held honorary membership in the Dallas County Medical Society. In addition, he was a member of the American Medical Association, the Southern Medical Association, and the American College of Surgeons.

He was affiliated with Highland Park Presbyterian Church in Dallas.

Before entering the practice of medicine, he taught school in Oklahoma for two years.

On November 4, 1908, Dr. Marshall married the former Miss Eunie Slack of Comanche, and the couple had two children, James Humphrey Marshall, Jr., and John Robert Marshall, who was killed in 1944 during World War II in the raid over the Polestia oil field in Romania.

Survivors include his wife; a son, James Humphrey Marshall, Jr.; a brother, J. E. Marshall, Jr. of Dallas, and two grandsons, John Mitchell Marshall and James Humphrey Marshall III.

DR. JOSEPH H. McGUIRE

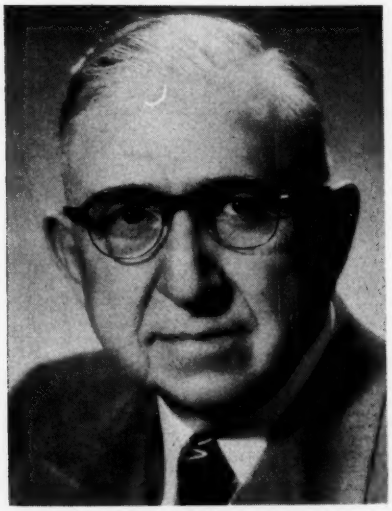
Dr. Joseph Hoshal McGuire, a Dallas orthopedic surgeon, died June 10, 1960, in a Dallas hospital.

He was born August 19, 1889, in Eureka, Ill., the son of Joseph McGuire and Ada (Hoshal) McGuire. He attended Eureka High School in Illinois and Eureka College, from which he received his bachelor of arts degree in 1911. His medical degree was awarded by Harvard Medical School at Boston in 1915. At Harvard, he was a member of the Oliver Wendell Holmes Medical Society.

Dr. McGuire was a resident physician at Boston City Hospital and Children's Hospital at Boston. He served surgical internship at Episcopal Hospital in Philadelphia and was the first resident surgeon at Baylor Hospital in Dallas.

He began his practice in Dallas in 1920, where he served until his death.

He was a member of the American Medical Association, the Texas Medical Association, the Southern Medical Association, the Dallas County Medical Society, the American Academy of Orthopaedic Surgeons, the Texas Surgical Society, and he was a fellow of the American College of Surgeons. In addition



DR. JAMES H. MARSHALL

DR. JOSEPH H. McGUIRE

he was an associate professor of orthopedic surgery at The University of Texas Southwestern Medical School at Dallas.

Dr. McGuire was also a member of the Central Christian Church and of the Masons.

During World War I, he served in the Medical Corps in England and France. He held the rank of captain.

Dr. McGuire's only survivor is his wife, Mrs. Doris Nelson McGuire of Dallas.

DR. GEORGE D. BRUCE

Dr. George Draper Bruce, a Baytown urologist, died August 25, 1960, in San Jacinto Memorial Hospital in Baytown.

Dr. Bruce was born May 30, 1908, in Webster. In 1925, he was graduated from Freeport High School, and he later attended Rice Institute, Houston, and the University of Texas at Austin. In May, 1933, he was awarded the medical degree by the University of Texas Medical Branch in Galveston.

Dr. Bruce interned at St. Mary's Infirmary in Galveston in 1933 and 1934, at Turner Urological Institute at Houston in 1935 and 1936. He served as a battalion medical officer in the Sixteenth Battalion of the Texas State Guard. In 1936, he established practice in Baytown. During his internship, he had also served as contract physician in the United States Army at Santa Anna.

A member of the American Medical Association and the Texas Medical Association, of which he was an alternate delegate, Dr. Bruce was a member of the Harris County Medical Society, and was current president of the East Harris County Branch of Harris County Medical Society. He also was on the board of directors of the Harris County Cancer Society, and he was a member of the State Board of Rural Health. He was a former chief of staff of San Jacinto Memorial Hospital, and a member of the board of Harris County Blood Bank.

Survivors include his wife, Mrs. Gloria Woodward Bruce; one daughter, Mrs. Cameron Gates of Baytown; one son, Barton Woodward Bruce of Baytown; and his parents, Mr. and Mrs. Lester H. Bruce of Freeport.

DR. DAVID A. TODD

Dr. David A. Todd, San Antonio, died September 3, 1960, at Rochester, Minn., following abdominal surgery for regional enteritis and chronic pancreatitis.

Born July 24, 1903, at Austin, Dr. Todd was the son of J. D. Todd and Minnie Lucy (Renick) Todd. He received his preliminary education in Corpus Christi and his bachelor of arts degree from the University of Texas at Austin in June, 1925. The University of Texas Medical Branch at Galveston awarded his medical degree in June, 1930. He was a volunteer fellow at the Mayo Clinic at Rochester in 1930 and 1931.

From 1931 until 1937, Dr. Todd served as pathologist to the Robert B. Green Memorial Hospital in San Antonio. In March, 1943, he entered the United States Army Medical Corps, serving as chief of laboratory service and chief of pathology to the

DR. GEORGE D. BRUCE

DR. DAVID A. TODD

Fifty-Sixth General Hospital, and as laboratory consultant to the Eight Hundred Eighteenth General Hospital Center at Liege, Belgium.

He resumed his practice of pathology in 1945.

He had served as consultant in pathology to the M. D. Anderson Hospital and Tumor Clinic in Houston, and as associate professor of pathology at the University of Texas Postgraduate School of Medicine, San Antonio Division.

Dr. Todd was president of the International Medical Assembly of Southwest Texas in 1942, and he was president of the Texas Society of Pathologists in 1946. At the time of his death, he was serving as president of the Texas Division of the American Cancer Society. Dr. Todd was a member of the American Society of Clinical Pathologists and the Texas Society of Pathologists.

He was a member of the Texas Medical Association, the American Medical Association, the Bexar County Medical Society, the Southern Medical Association, the Nix Tumor Clinic, the Inter-Society Cytology Council, the Pan-American Cancer Cytology Society, and the Association of Military Surgeons.

In addition, he belonged to the Rotary International, the San Antonio Country Club, and the San Antonio Club of Texas.

Dr. Todd was married on November 5, 1931, to Miss Helen Beissner at Galveston.

Survivors include his wife and two daughters, Mrs. Lawrence Frase of Atlanta, Ga., and Miss Jean Todd of San Antonio; one granddaughter, Laura Frase; two brothers, Judge J. D. Todd of Corpus Christi, and Lt. Col. J. R. Todd of Laurel, Md.; and two sisters, Mrs. Parker Fitzhugh and Mrs. Marjorie Todd Chiles, both of Houston.

DR. FRANK J. IIAMS

Dr. Frank John Iiams, Houston physician, died September 11, 1960, following a long illness.

He was born November 29, 1893, at Galveston, a descendant of two of Stephen F. Austin's original 300 colonists.

Dr. Iiams' preliminary education was at the Houston Academy. He later received the bachelor of arts degree from Austin College at Sherman, and the medical degree from the University of Texas Medical Branch at Galveston.

He interned at the San Francisco City and County Hospital, the New York Lying-in Hospital, and the Jamaica City Hospital.

A member of the American Medical Association and an honorary member of the Texas Medical Association and the Harris County Medical Society, Dr. Iiams specialized in obstetrics and gynecology. He once served as secretary to the Texas Medical Association Section on Obstetrics and Gynecology.

He belonged to the Second Presbyterian Church of Houston.

Survivors include his wife, Mrs. Ruth Barron Iiams; a daughter, Miss Mary Elizabeth Iiams; and a son, Barron Iiams.

DR. J. F. ROWE

DR. J. F. ROWE

Dr. John Forsythe Rowe, Dallas, died September 16, 1960, at his home in Dallas.

He was born August 18, 1893, at Hillsboro. He was graduated from Waco High School and from Baylor University at Waco, and was awarded the medical degree by Vanderbilt University School of Medicine at Nashville in 1917. After interning at Episcopal Hospital in Philadelphia, he established private practice in Waco in 1919, and in 1922 he entered the service of the Veterans Administration, from which he retired in 1954, after 32 years' service. He had been regional director of the VA at Waco and city health officer.

He was an honorary member of the Dallas County Medical Society, and the Texas Medical Association, and a member of the American Medical Association. He also was a thirty-second degree Mason and a member of Cliff Temple Baptist Church at Dallas.

Survivors include his wife of Dallas, his son, Sy Matt Rowe, Dallas, and two grandchildren.

★ Coming Meetings

Texas Medical Association, Austin, Jan. 28, 1961; Galveston, April 23-25, 1961. Dr. May Owen, Fort Worth, Pres.; Mr. C. Lincoln Williston, 1801 North Lamar Blvd., Austin, Exec. Secy.

American Medical Association, Washington, D. C., Nov. 28-Dec. 1, 1960. Dr. E. Vincent Askey, Los Angeles, Pres.; Dr. F. J. L. Blasingame, 535 North Dearborn, Chicago 10, Exec. Vice-Pres.

Current Meetings

DECEMBER

American Academy of Dermatology and Syphilology, Chicago, Dec. 3-8, 1960. Dr. Francis W. Lynch, St. Paul, Minn., Pres.; Dr. Robert R. Kierland, Mayo Clinic, Rochester, Minn., Secy.

Radiological Society of North America, Cincinnati, Ohio, Dec. 4-9, 1960. Dr. Lawrence L. Robbins, Boston, Pres.; Dr. Donald S. Childs, 713 E. Genesee, Syracuse 2, N. Y., Secy.

Southern Surgical Association, Boca Raton, Fla., Dec. 6-8, 1960. Dr. Francis Massie, Pres.; Dr. John D. Martin, Jr., Emory University, Ga., Secy.

Texas Academy of Internal Medicine, Dallas, December, 1960. Dr. Robert Mitchell, Plainview, Pres.; Dr. Sam Arnett, 2609 19th St., Lubbock, Secy.

Texas Rheumatism Association, Dallas, Dec. 9, 1960. Dr. Howard C. Coggeshall, Dallas, Pres.; Dr. J. Morris Horn, 3707 Gaston, Dallas, Secy.

Texas State Board of Medical Examiners, Fort Worth, Dec. 1-3, 1960. Dr. M. H. Crabb, Fort Worth, Secy.; Mrs. Carolyn H. Millard, 1714 Medical Arts Bldg., Fort Worth, Assistant Secy.

Texas Society of Ophthalmology and Otolaryngology, San Antonio, Dec. 2-3, 1960. Dr. Lyle J. Logue, Houston, Pres.; Dr. Oliver Suehs, 14 Medical Arts Square, Austin, Secy.

Private Clinics and Hospitals, Dallas, December, 1960. Dr. Vance Terrell, Stephenville, Pres.; Mr. B. J. Warren, Deaton Hospital, Galena Park, Secy.

National and Regional

American Academy of Allergy, Washington, D. C., Feb. 6-8, 1961. Dr. Bram Rose, Montreal, Canada, Pres.; Dr. Joseph Noah, 100 N. Euclid Ave., St. Louis 8, Mo., Secy.

American Academy of General Practice, Miami, April 17-20, 1961. Dr. John G. Walsh, Sacramento, Calif., Pres.; Mr. Mac F. Cahal, Volker Blvd. at Brookside, Kansas City 12, Executive Secy.

American Association of Obstetricians and Gynecologists. Dr. Robert A. Ross, Chapel Hill, N. C., Pres.; Dr. Clyde L. Randall, 216 Summer St., Buffalo 22, Secy.

American Academy of Pediatrics, Washington, D C., April 10-12, 1961. Dr. George M. Wheatly, New York, N.Y., Pres.; Dr. E. H. Christopherson, 1801 Hinman Ave., Evanston, Ill., Executive Director.

American Academy of Ophthalmology and Otolaryngology. Dr. Dohrman K. Pischel, 940 Post St., San Francisco, Pres.; Dr. W. L. Benedict, 15 Second St. S.W., Rochester Minn., Secy.

American Association for Maternal and Infant Health. Dr. M. Edward Davis, Chicago, Pres.; Mrs. Patricia Dorr, 116 S. Michigan Ave., Chicago 3, Executive Director.

American Association for Thoracic Surgery, Philadelphia, April 24-26, 1961. Dr. John H. Gibbon, Jr., Philadelphia, Pres.; Dr. Hiram T. Langston, 7730 Corondelet Ave., St. Louis 5, Secy.

American Association of Genito-Urinary Surgeons. Dr. Reed M. Nesbitt, Ann Arbor, Mich., Pres.; Dr. W. J. Engel, 2020 E. 93rd St., Cleveland 6, Secy.

American Association of Plastic Surgeons, May 17, 1961. Dr. Herbert Conway, New York City, Pres.; Dr. Thomas D. Cronin, 6615 Travis St., Houston 25, Secy.

American Cancer Society. Dr. Warren H. Cole, Chicago, Pres.; Mr. Granville Whitlesey, 521 West 57th St., New York 19, Secy.

American College of Allergists, Dallas, March 12-17, 1961. Dr. Giles A. Koelsche, Rochester, Minn., Pres.; Mr. Eloi Bauers, 2160 Rand Tower, Minneapolis, Executive Vice-Pres.

American College of Chest Physicians, New York City, June 22-26, 1961. Dr. M. Jay Flipse, 550 Brickell, Miami, Pres.; Mr. Murray Kornfeld, 112 E. Chestnut, Chicago 11, Executive Director.

American College of Gastroenterology. Dr. Joseph Shaiken, Milwaukee, Pres.; Mr. Daniel Weiss, 33 West 60th, New York 23, Executive Director.

American College of Obstetricians and Gynecologists. Dr. John I. Brewer, Chicago, Pres.; Mr. Donald F. Richardson, P. O. Box 749, Chicago 90, Executive Secy.

American College of Physicians, Miami Beach, May 8-12, 1961. Dr. Chester S. Keefer, Boston, Pres.; Dr. E. C. Rosenow, Jr., 4200 Pine St., Philadelphia 4, Executive Director.

American College of Radiology. Dr. Earl E. Barth, Chicago, Pres.; Mr. W. C. Stronach, 20 N. Wacker Dr., Chicago 6, Executive Director.

American Congress of Physical Medicine and Rehabilitation. Dr. F. J. Kottke, Minneapolis, Pres.; Dorothea C. Augustin, 30 N. Michigan Ave., Chicago 2, Executive Secy.

American College of Surgeons. Dr. Owen H. Wangensteen, Minneapolis, Pres.; Dr. William E. Adams, 950 E. 59th St., Chicago, Secy.

American Dermatological Association. Dr. Marion B. Sulzberger, New York, Pres.; Dr. Wiley M. Sams, 308 Ingraham Bldg., Miami 32, Secy.

American Gastroenterological Association, Chicago, May 25-27, 1961. Dr. Hugh Butt, Rochester, Minn., Pres.; Dr. Wade Volwiler, Dept. of Medicine, University of Washington, Seattle 5, Secy.

American Gynecological Society. Dr. Karl H. Martzloff, Portland, Pres.; Dr. A. A. Marchetti, 3800 Reservoir Rd. N.W., Washington 7, D.C., Secy.

American Heart Association. Dr. A. Carlton Ernstene, Cleveland, Pres.; Mr. William F. McGlone, 44 E. 23rd, New York 10, Secy.

American Hospital Association. Dr. Russell A. Nelson, Baltimore, Md., Pres.; Dr. Edwin L. Crosby, 18 E. Division Street, Chicago, Executive Director.

American Laryngological, Rhinological, and Otological Society, Lake Placid Club, May 23-25, 1960. Dr. Fletcher D. Woodward, Charlottesville, Va., Pres.; Dr. C. S. Nash, 708 Medical Arts Bldg., Rochester, N. Y., Secy.

American Neurological Association, Atlantic City, June 12-14, 1961. Dr. H. G. Wolff, New York City, Pres.; Dr. M. D. Yahr, 710 W. 16th St., New York 32, Secy.

American Ophthalmological Society, Hot Springs, Va., May 17-19, 1961. Dr. Edwin B. Dunphy, Boston, Pres.; Dr. Joseph A. C. Wadsworth, 108 E. 68th, New York 21, Secy.

American Orthopaedic Association, Yosemite National Park, May 22-25, 1961. Dr. Edwin F. Cave, Boston, Pres.; Dr. Lee Ramsay Straub, 535 E. 70th St., New York 21, Secy.

American Pediatric Society, Atlantic City, May 2-5, 1961. Dr. L. Emmett Holt, New York City, Pres.; Dr. Conrad M. Riley, Denver General Hospital, Denver 4, Secy.

American Proctologic Society. Dr. H. R. Reichman, Salt Lake City, Pres.; Dr. Norman D. Nigro, 10 Peterboro, Detroit 1, Secy.

American Psychiatric Association, Chicago, May 7-12, 1961. Dr. Robert H. Felix, Bethesda, Md., Pres.; Austin M. Davies, 1270 Avenue of the Americas, New York 20, Exec. Assistant.

American Public Health Association. Dr. Malcolm H. Merrill, Berkeley, Calif., Pres.; Dr. Berwyn F. Mattison, 1790 Broadway, New York 19, Executive Secy.

American Society of Anesthesiologists. Dr. J. Earl Remlinger, Jr., Wilmette, Ill., Pres.; Dr. Robert L. Patterson, 612 Bershire Drive, Pittsburgh 15, Secy.

American Society of Clinical Pathologists. Dr. John J. Clemmer, Albany, Pres.; Mr. Claude E. Wells, 445 Lake Shore Drive, Chicago 11, Executive Secy.

American Surgical Association, White Sulphur Springs, W. Va., April 3-6, 1960. Dr. Warren H. Cole, Chicago, Pres.; Dr. William Altemeier, Cincinnati General Hospital, Cincinnati 29, Secy.

American Urological Association, Los Angeles, May 22-25, 1961. Dr. John E. Heslin, Albany, N. Y., Pres.; Mr. William P. Didusch, 1120 N. Charles St., Baltimore 1, Executive Secy.

Association of American Physicians and Surgeons. Dr. Louis Wegryn, Elizabeth, N. J., Pres.; Mr. Harry E. Northam, 185 N. Wabash Ave., Chicago 1, Executive Director.

International College of Surgeons, U. S. Chapter. Dr. Henry Meyerding, Rochester, Minn., Pres.; Dr. Ross T. McIntire, 1516 Lake Shore Dr., Chicago, Executive Director.

National Tuberculosis Association, Cincinnati, Ohio, May 21-26, 1961. Mr. Herbert C. De Young, Chicago, Pres.; Judge Herman Dehnke, 213 Main, Harrisville, Mich., Secy.

South Central Association of Blood Banks, New Orleans, March 3-4, 1961. Dr. Kenneth M. Heard, Jackson, Miss., Pres.; L. Ruth Guy, Ph.D., Room 1101, Stoneleigh Hotel, Dallas, Secy.

Southern Medical Association, Dallas, Nov. 6-9, 1961. Dr. Lee F. Turlington, Birmingham, Ala., Pres.; Mr. Robert F. Butts, 2601 Highland Ave., Birmingham 5, Ala., Executive Secy.

Southern Psychiatric Association. Dr. David A. Wilson, Charlottesville, Va., Pres.; Dr. Richard Proctor, Winston-Salem, N. C., Secy.

Southwest Allergy Forum, Padre Island, April 9-11, 1961. Dr. S. H. Jaros, Harlingen, Pres.; Dr. H. E. Hawkins, 105 W. Elizabeth, Brownsville, Secy.

Southwest Regional Cancer Conference. Dr. Robb Rutledge, Fort Worth, Chm.; Mrs. Ira Frances Ball, Westchester House, Fort Worth, Secy.

Southwestern Medical Association. Dr. R. L. Deter, El Paso, Pres.; Dr. Merle Thomas, 1501 Arizona Building, El Paso, Secy.

Southwestern Society of Nuclear Medicine, San Antonio. Dr. Peter E. Russo, Oklahoma City, Pres.; Dr. J. R. Maxfield, Jr., 2711 Oak Lawn Avenue, Dallas, Secy.

Southwestern Surgical Congress, St. Louis, April 10-13, 1961. Dr. Howard D. Cogswell, Tucson, Ariz., Pres.; Mary O'Leary, 813 Medical Arts Bldg., Oklahoma City, Exec. Secy.

Tri-State Medical Assembly. Dr. R. B. Langford, Shreveport, Pres.; Dr. J. W. Wilson, Jr., 940 Margaret Place, Shreveport, Secy.

United States-Mexico Border Public Health Association, San Diego, June 25-29, 1961. Dr. Adán Mercado Cerda, Tamaulipas, Mexico, Pres.; Dr. Ulpiano Blanco, El Paso, Secy.

State

Texas Academy of General Practice, Houston, Oct. 15-18, 1961. Dr. Jack M. Partain, San Antonio, Pres.; Mr. Donald C. Jackson, 1905 N. Lamar, Austin, Executive Secy.

Texas Air-Medics Association, Galveston, April 22-25, 1961. Dr. C. D. Henry, San Antonio, Pres.; Dr. C. F. Miller, Box 1338, Waco, Secy.

Texas Association for Mental Health, Galveston, 1961. Mr. William R. Ransone, Dallas, Pres.; Mrs. Lawrence Marcus, 3525 Arrowhead Drive, Dallas, Secy.

Texas Association of Obstetricians and Gynecologists, Houston, Feb. 10-11, 1961. Dr. Oran V. Prejean, Dallas, Pres.; Dr. Hugh W. Savage, 815 Fifth Ave., Fort Worth, Secy.

Texas Association of Public Health Physicians, Galveston, April 22-25, 1961. Dr. L. P. Walter, Austin, Pres.; Dr. W. V. Bradshaw, Jr., 1800 University Drive, Fort Worth, Secy.

Texas Club of Internists. Dr. W. W. Bondurant, Jr., San Antonio, Pres.; Dr. T. Haynes Harvill, Medical Arts Building, Dallas 1, Secy.

Texas Chapter, American Academy of Pediatrics, Galveston, April 22-25, 1961. Dr. J. T. Bennett, El Paso, Pres.; Dr. W. W. Kelton, Jr., 108 West 30th, Austin, Secy.

Texas Chapter, American College of Chest Physicians, Galveston, April 22-25, 1961. Dr. Hiram M. Anderson, San Angelo, Pres.; Dr. Milton V. Davis, 3707 Gaston Avenue, Dallas, Secy.-Treas.

Texas Dermatological Society, Galveston, April 22-25, 1961. Dr. M. W. Harrison, Houston, Pres.; Dr. D. Shelton Blair, 1609 Medical Arts Building, Dallas, Secy.-Treas.

Texas Diabetes Association, Galveston, April 22-25, 1961. Dr. James A. Greene, Houston, Pres.; Dr. John W. Chriss, 2436 Morgan Street, Corpus Christi, Secy.-Treas.

Texas Division, American Cancer Society. Dr. David A. Todd, San Antonio, Pres.; Mr. Curt W. Reimann, 5014 Bull Creek Rd., Austin 3, Executive Director.

Texas Heart Association. Dr. Robert E. Leslie, El Campo, Pres.; Mr. Ernest T. Guy, 404 Jesse H. Jones Library Building, Houston 25, Executive Director.

Texas Hospital Association, Dallas, May 15-17, 1961. Dr. F. R. Higginbotham, San Antonio, Pres.; Mr. O. Ray Hurst, 1905 N. Lamar, Austin, Executive Director.

Texas Industrial Medical Association, Galveston, April 22-25, 1961. Dr. Noble B. Daniel, Texarkana, Pres.; Dr. J. G. Burdick, Pasadena, Secy.

Texas Neuropsychiatric Association, Galveston, April 22-25, 1961. Dr. Clarence S. Hoekstra, Dallas, Pres.; Dr. E. Ivan Bruce, Jr., Galveston, Secy.-Treas.

Texas Ophthalmological Association, Galveston, April 22-25, 1961. Dr. Otto Lippmann, Austin, Pres.; Dr. James H. Scruggs, Waco, Secy.

Texas Orthopedic Association, Galveston, April 22-25, 1961. Dr. Ike S. McReynolds, Houston, Pres.; Dr. Margaret Watkins, Dallas, Secy.-Treas.

Texas Otolaryngological Association, Galveston, April 22-25, 1961. Dr. August J. Streit, Amarillo, Pres.; Dr. Louis E. Adin, Jr., Dallas, Secy.

Texas Pediatric Society. Dr. Byron York, Houston, Pres.; Dr. C. E. Gilmore, 811 Bonham, Paris, Secy.

Texas Physical Medicine and Rehabilitation Society, Galveston, April 22-25, 1961. Dr. Edward M. Krusen, Dallas, Pres.; Dr. Oscar Selke, Medical Professional Building, Houston, Secy.

Texas Proctologic Society, Houston, February, 1961. Dr. J. Wade Harris, Houston, Pres.; Dr. H. Gray Carter, 915 St. Joseph St., Dallas, Secy.

Texas Public Health Association, Fort Worth, March 5-8, 1961. Mrs. Maggie Belle Davis, Corpus Christi, Pres.; Mr. Joseph N. Murphy, Jr., Box 4012, Austin 51, Executive Secy.

Texas Radiological Society, Fort Worth, Jan. 20-21, 1961. Dr. Delphin von Briesen, El Paso, Pres.; Dr. R. P. O'Bannon, 1216 Pennsylvania, Fort Worth, Secy.

Texas Society of Anesthesiologists, Galveston, April 22-25, 1961. Dr. Randle J. Brady, Houston, Pres.; Dr. Eugene L. Slataper, Houston, Secy.

Texas Society of Athletic Team Physicians, Galveston, April 22-25, 1961. Dr. W. S. Horn, Jr., Fort Worth, Pres.; Dr. Louis Levy, Fort Worth, Secy.-Treas.

Texas Society of Gastroenterologists and Proctologists, Galveston, April 22-25, 1961. Dr. H. Gray Carter, Dallas, Pres.; Dr. A. C. Broders, Jr., Temple, Secy.-Treas.

Texas Society of Pathologists, Inc., Galveston, April 22-25, 1961. Dr. O. J. Wollenman, Jr., Fort Worth, Pres.; Dr. Vernie A. Stembridge, Dallas, Secy.-Treas.

Texas Society of Plastic Surgeons, Galveston, April 22-25, 1961. Dr. J. B. Patterson, Fort Worth, Pres.; Dr. Raymond O. Brauer, Houston, Secy.-Treas.

Texas Society on Aging. Dr. Ernest W. Keil, Temple, Pres.; Mrs. William B. Ruggles, 3701 Stratford, Dallas, Secy.-Treas.

Texas Surgical Society, Dallas, April 2-4, 1961. Dr. Robert L. Sewell, Fort Worth, Pres.; Dr. G. V. Brindley, Jr., Scott and White Clinic, Temple, Secy.

Texas Traumatic Surgical Society, Galveston, April 22-25, 1961. Dr. Edward R. Rowe, Galveston, Pres.; Dr. John C. Long, Plainview, Secy.-Treas.

Texas Tuberculosis Association, Corpus Christi, March 16-18, 1961. Dr. J. Edward Johnson, Pres.; Miss Pansy Nichols, P. O. Box 6158, Austin 21, Executive Director.

Texas Urological Society, Wichita Falls, January 21-22, 1961. Dr. Joseph Mitchell, Dallas, Pres.; Dr. O. C. Berg, 1300 8th St., Wichita Falls, Secy.

District

First District Society, Pecos, Feb. 3, 1961. Dr. Russell Holt, El Paso, Pres.; Dr. Gordon L. Black, 1501 Arizona St., El Paso, Secy.

Second District Society, Snyder, 1961. Dr. M. J. Loring, Midland, Pres.; W. S. Parks, Jr., 2009 W. Wall, Midland, Secy.

Third District Society, Amarillo, April 15, 1961. Dr. James L. Johnson, Amarillo, Pres.; Dr. H. Fred Johnson, 2308 W. Eighth, Amarillo, Secy.

Fourth District Society, San Angelo, May, 1961. Dr. J. G. Bodenhamer, Mason, Pres.; Dr. M. D. Knight, 234 W. Beauregard, San Angelo, Secy.

Fifth and Sixth Districts Society, Corpus Christi, July 8-9, 1961. Dr. John W. Chriss, Pres.; Dr. James Gabbard, 1001 Louisiana, Corpus Christi, Secy.

Seventh District Society. Dr. Robert N. Snider, Austin, Pres.; Dr. Richard Lucas, 502 W. 13th, Austin, Secy.

Eighth District Society, Corpus Christi. Dr. M. Warren Hardwick, Angleton, Pres.; Dr. J. L. Coleman, Box 3346, Victoria, Secy.

Ninth District Society, Bellville, Spring, 1961. Dr. Irving M. Watson, Jr., Conroe; Dr. William E. Sharp, 721 E. Texas, Baytown, Secy.

Tenth District Society. Dr. Bedford Mace, Beaumont, Pres.; Dr. Irving M. Richman, 3280 Fannin St., Beaumont, Secy.

Eleventh District Society, Jacksonville. Dr. Marlin T. Braswell, Henderson, Pres.; Dr. Floyd Verheyden, 813 John St., Jacksonville, Secy.

Twelfth District Society, Waco, January 10, 1961. Dr. Bernard Rosen, Corsicana, Pres.; Dr. R. L. Campbell, 205 S. 15th St., Corsicana, Secy.

Thirteenth District Society, Fort Worth, Fall, 1960. Dr. William B. Allensworth, Mineral Wells, Pres.; Dr. R. D. Moreton, 1217 W. Cannon, Fort Worth, Secy.

Fifteenth District Society. Dr. H. O. Padgett, Marshall, Pres.; Dr. James S. Leeves, Naples, Secy.

Clinics

Blackford Memorial Cancer Lectures, Denison. Dr. Andrew Jackson, Denison, Chm.

Dallas Southern Clinical Society Conference, Dallas, March 20-22, 1961. Dr. Frank H. Kidd, Jr., Dallas, Pres.; Millard J. Heath, 433 Medical Arts Bldg., Dallas 1, Executive Officer.

International Medical Assembly of Southwest Texas, San Antonio, Jan. 23-25, 1961. Dr. Max E. Johnson, San Antonio, Pres.; S. E. Cockrell, 202 W. French Place, San Antonio, Exec. Secy.

New Orleans Graduate Medical Assembly, New Orleans, March 6-9, 1961. Dr. Maurice E. St. Martin, New Orleans, Pres.; Mrs. Irma B. Sherwood, 430 Tulane Ave., New Orleans 12, Executive Secy.

North Texas-Southern Oklahoma Fall Clinical Conference. Dr. Frank J. Lee, 1300 8th, Wichita Falls, Chm.

Oklahoma City Clinical Conference, Oct. 23-25, 1961. Dr. Vernon D. Cushing, Oklahoma City, Pres.; Miss Alma F. O'Donnell, 503 Medical Arts Bldg., Oklahoma City 2, Executive Secy.

Postgraduate Medical Assembly of South Texas, Houston, July 10-12, 1961. Dr. C. Forrest Jorns, Houston, Pres.; Mrs. W. H. Dahme, 412 Jesse H. Jones Library Bldg., Houston 25, Exec. Secy.

Board Examinations

Texas State Board of Examiners in Basic Sciences, Austin, Houston, Galveston and Dallas. Henry B. Hardt, Ph.D., Fort Worth, Pres.; Mrs. Betty J. Anderson, Chief Clerk, State Office Bldg., 201 E. 14th St., Austin.